

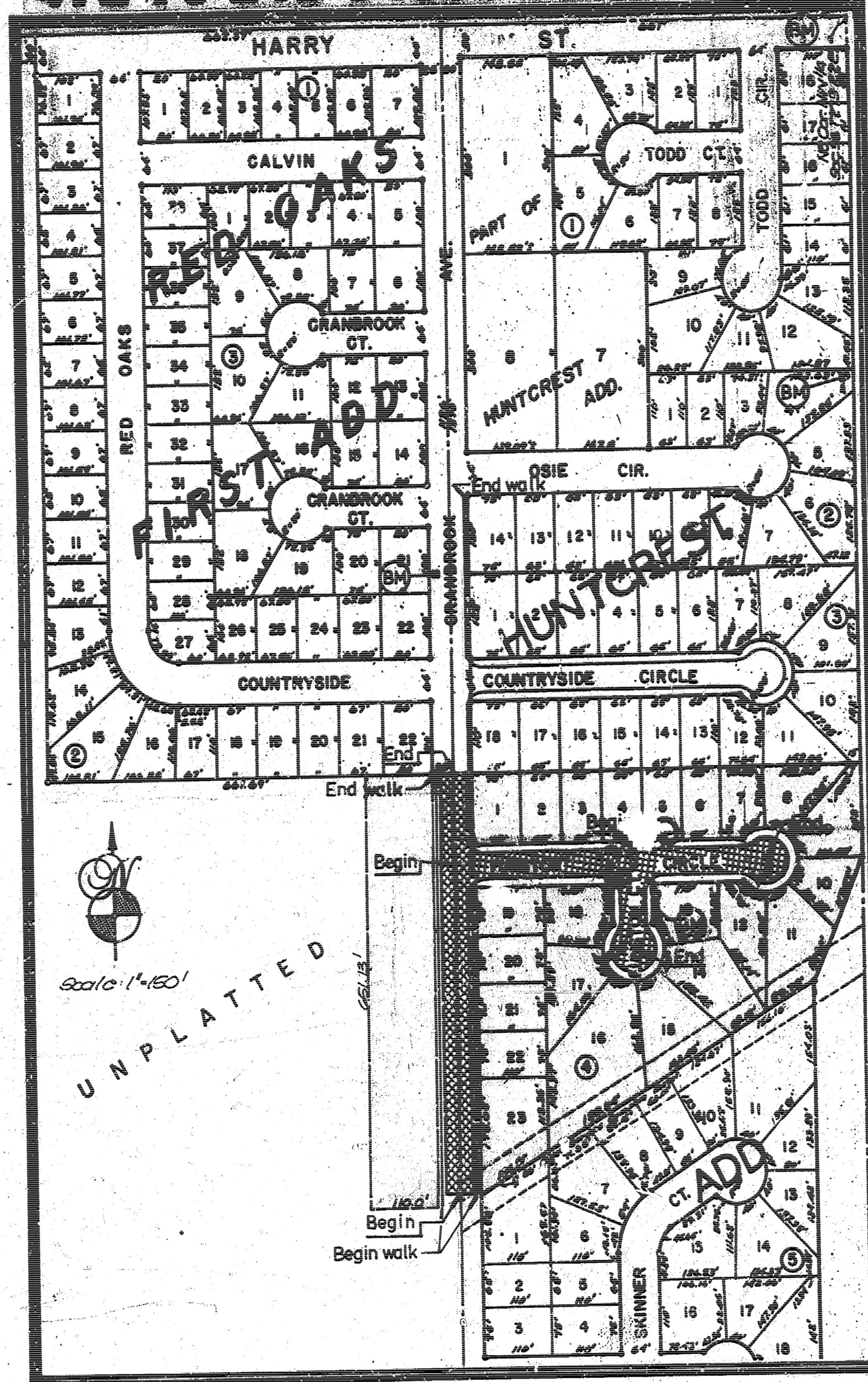
**STREET IMPROVEMENTS FOR
HUNTCREST SECOND ADDITION**

FUNSTON CIRCLE From the E.L. of Cranbrook to and including Cul-de-Sac
FUNSTON COURT From the S.L. of Funston Circle to and including Cul-de-Sac
CRANBROOK STREET From the S.W. Cor. Lot 23, Blk. 4, Huntcrest Second Addn. to the S.L. Red Oaks First Addn.

GENERAL NOTES

- Utility service lines, poles, valve boxes, meters, and etcetera are to be adjusted as necessary by others prior to construction unless the plans specifically call for their adjustment by the Contractor or unless the plans specifically identify a utility to be adjusted by its owner during construction. Existing utilities and their location, as shown on the plans, represent the best information obtainable for design. The contractor will be required to work around existing utilities within the right-of-way which do not conflict with proposed construction.
- Rubble from the removal of miscellaneous structures and excess excavation which is to be wasted shall be disposed of on sites to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance and site location. Locations that, in the opinion of the Engineer, will leave an unsightly appearance will not be approved.
- No more than 6 drives 12 feet in width, or equivalent combinations thereof, are to be constructed with this project.
- Widened gutter section of combined curb and gutter at intersections will not be paid for directly, and this cost shall be considered as subsidiary to the other contract pay items of work.
- Limits of earthwork shall match existing ground elevations at the right-of-way line unless otherwise noted on the plans with a new finished grade elevation. When a new finished grade elevation is shown, the earthwork shall extend one foot beyond the right-of-way line and then sloped up or down using permissible slopes to match the existing ground surface.
- The Contractor shall be responsible for preserving property irons. The Contractor will be required to re-establish any property irons which are damaged or destroyed by his construction operations. Such irons shall be re-established by a licensed land surveyor in accordance with state laws.
- Trees and shrubs in public right-of-way which are in direct conflict with the proposed new construction shall be removed by the Contractor with the Engineer's approval. Trees and shrubs not in conflict with proposed construction shall be saved and protected from damage. The cost of all such removal shall be included in the lump sum price bid for right-of-way clearing.
- All water main relocation included in this project shall be constructed in accordance with City of Wichita Standard Specifications for Water Main Installations no. 14533.
- The Water Department shall field locate water valves one time during construction when requested by the Contractor. It shall be the Contractor's responsibility to preserve such field locations during the construction process. Water valves, water valve boxes or fire hydrants damaged during construction shall be repaired by the Contractor at his own expense.

PROJECT NUMBER
472-78-243-81000-000-001



CITY OF WICHITA, KANSAS

**MICHAEL E. LINDEBAK
CITY ENGINEER**

INDEX of SHEETS

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Typical Section (35' x 6')	2
Typical Section (37' x 6')	3
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Plan Profile - Incidental Drains	7
Detail Sheet (1.1' x 6' - 6' x 6' opening)	8
Detail Sheet (1.1' x 6' - 6' x 10' opening)	9
Earthwork X-sections	10-12

BENCHMARKS

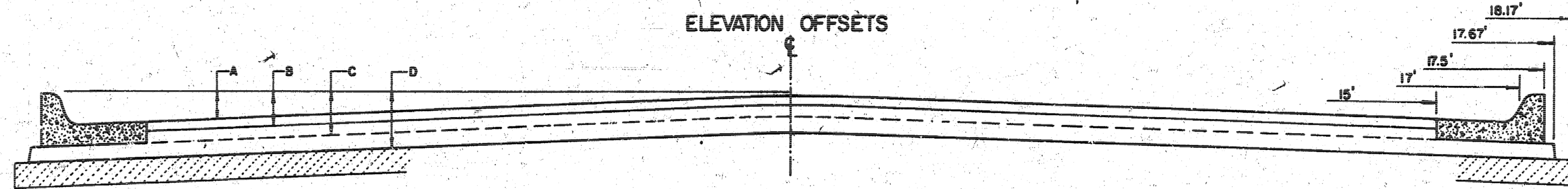
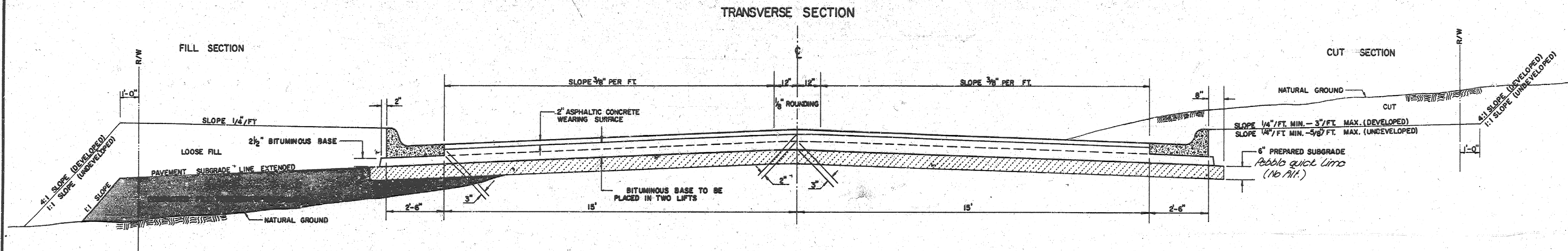
- City disc 1/2 mi. E. Webb Road @ 37.8' N, @ Harry St. and 1.01' W. of NE Cor. NW 1/4, Sec. 33, T. 27 S., R. 2 E.
Elev. = 1343.15 USGS / 155.53 City datum.
- 1/2" bar in conc. in NW Cor. Lot 4, Blk 2 Huntcrest Second Addn.
Elev. = 157.47 City datum
- 10' cut in T.C. W.S. Cranbrook 104' (±) S. E. (S) Cranbrook Ct. (lot 21, Blk 3, Red Oaks 1st Addn)
Elev. = 171.60 City datum
- 1/2" bar in conc. 32.0' (±) E. and 28.0' (±) S. @ intersection Funston Cir @ Funston Ct. (W.S. Lot 13, Block 4, Huntcrest Second Addn)
Elev. = 164.05 City datum

IMPROVEMENT DISTRICT

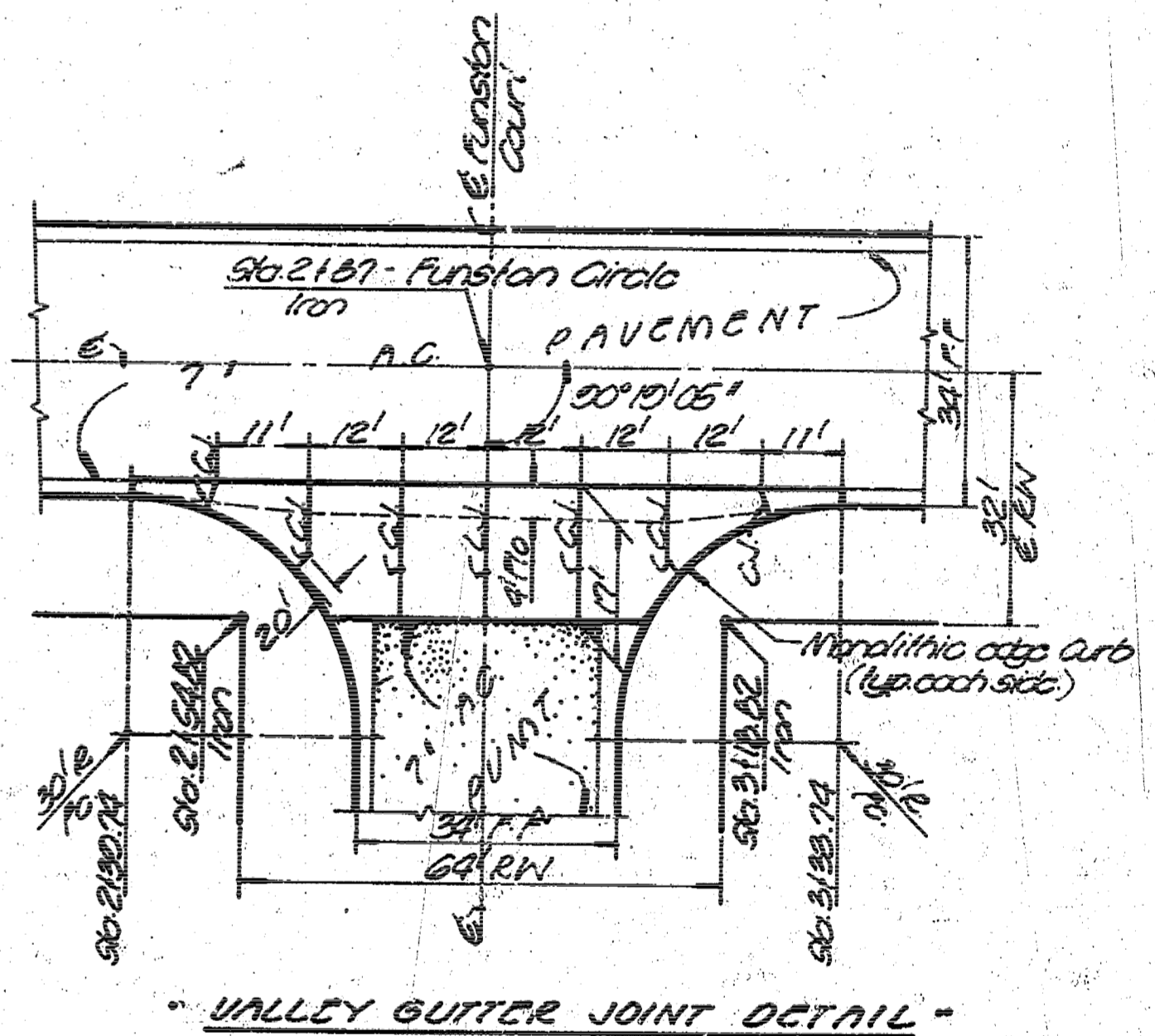


TITLE SHEET		1/8
BAUGHMAN COMPANY, P.A. SURVEYING & ENGINEERING		
316-232-7271 • 315 ELLIS • WICHITA, KANSAS 67211		
Design: T.C. Franks	Drawn: Eschler	Approved: 5 Feb 88 as noted
Sheet: 1	of: 12	

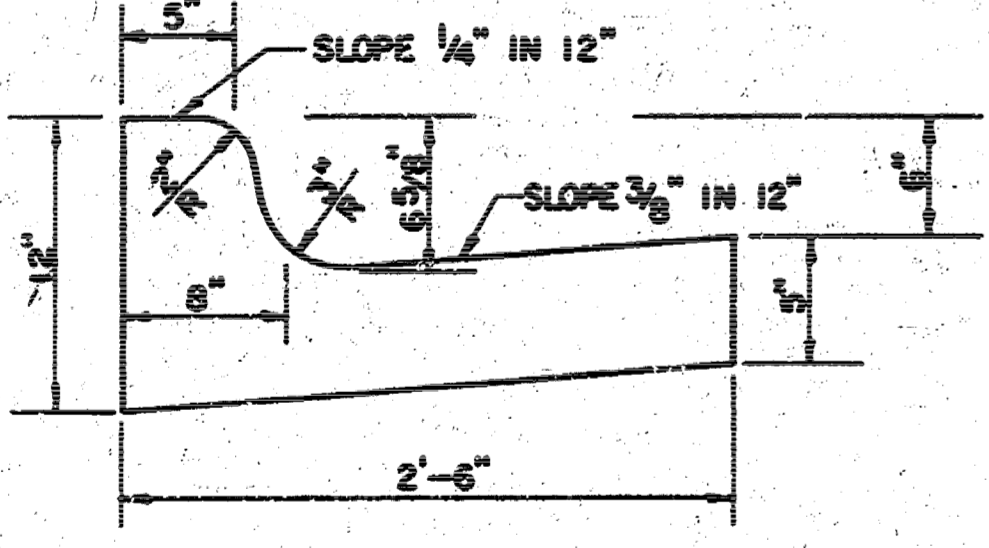
TYPICAL 35' PAVEMENT DETAILS



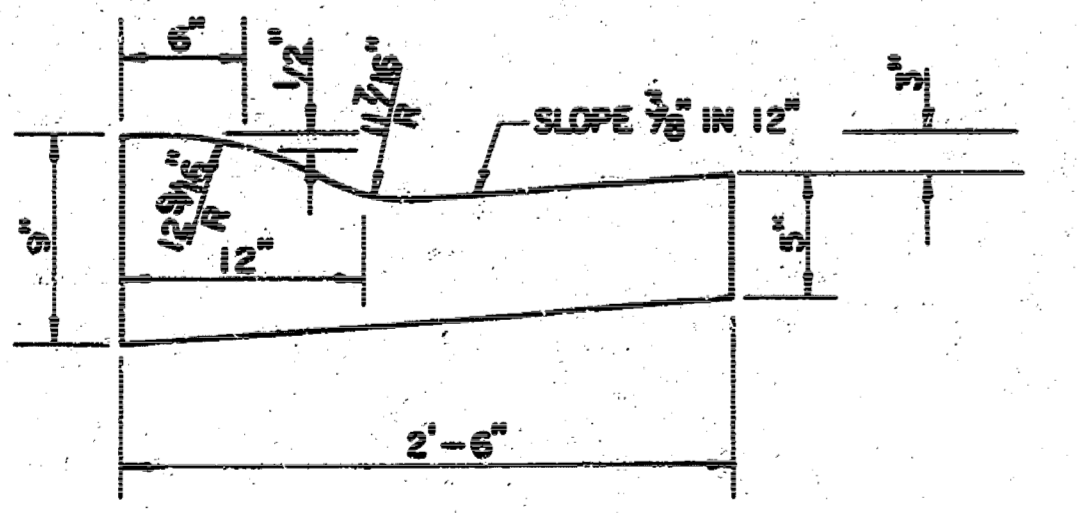
	DISTANCE FROM CENTERLINE (LT. & RT.)												
	0'	2'	4'	6'	8'	10'	12'	14'	15'	17'	17.5'	17.67'	18.17'
A: TOP OF CURBS TO TOP OF SURFACE LIFT	0.04	0.08	0.14	0.21	0.29	0.33	0.39	0.46	0.49	—	—	—	—
B: TOP OF CURBS TO TOP OF UPPER BASE LIFT	0.21	0.25	0.31	0.37	0.45	0.50	0.56	0.62	0.65	—	—	—	—
C: TOP OF CURBS TO TOP OF LOWER BASE LIFT	0.37	0.43	0.50	0.57	0.67	0.72	0.79	0.87	0.90	0.98	1.00	1.00	—
D: TOP OF CURBS TO TOP OF SUBGRADE	0.62	0.67	0.74	0.81	0.90	0.95	1.02	1.08	1.12	1.19	1.21	1.21	1.23



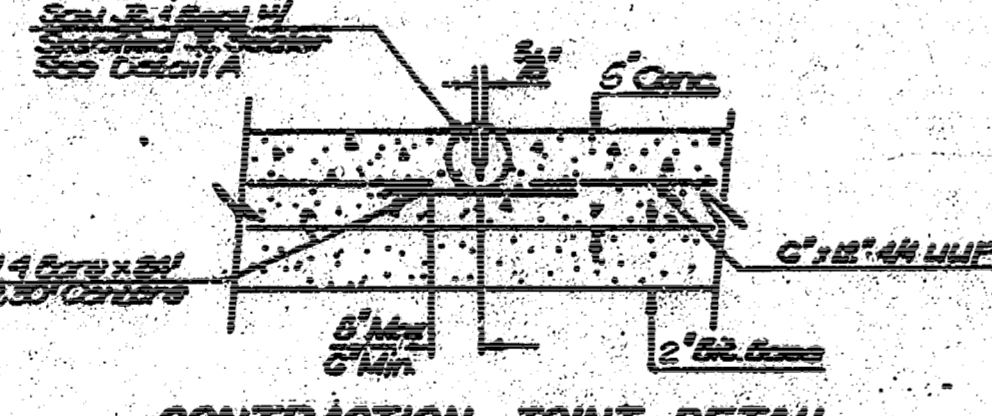
COMBINED CURB & GUTTER



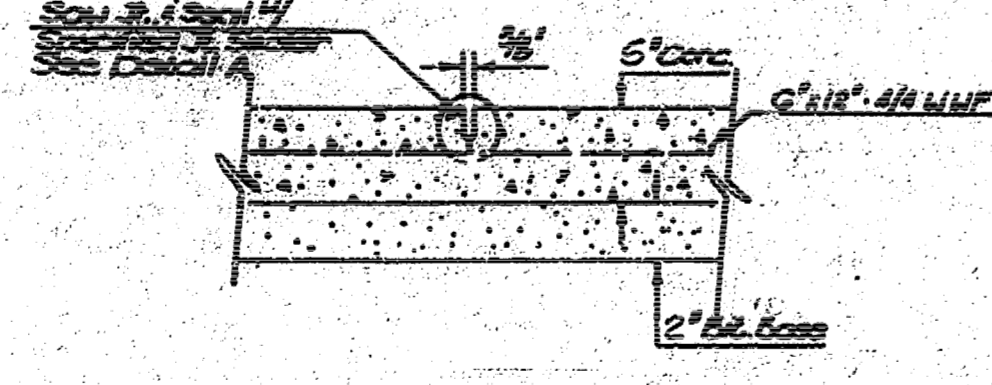
ROLL TYPE COMBINED CURB & GUTTER



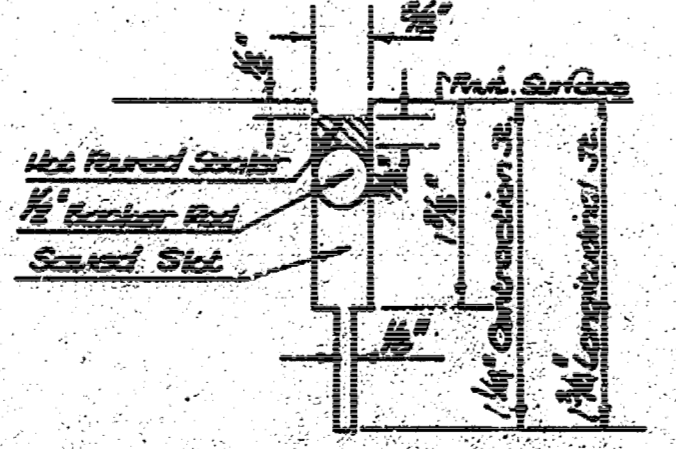
LONGITUDINAL JOINT DETAIL



CONTRACTION JOINT DETAIL



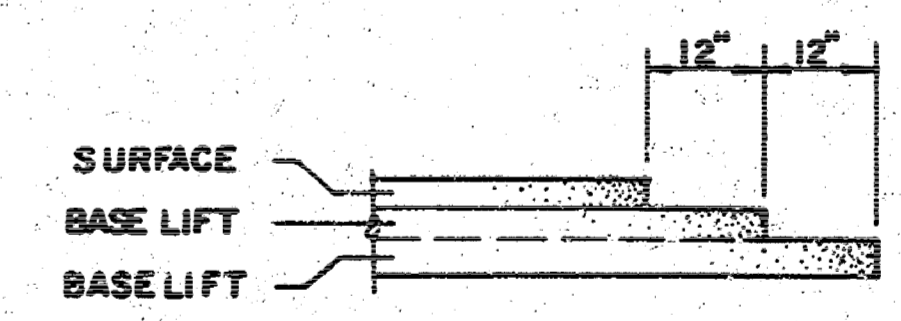
DETAIL A



GENERAL NOTES

- 1) THE ASPHALTIC CONCRETE PAVEMENT BETWEEN THE COMBINED CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 7" ASPHALTIC CONCRETE (5" BITUMINOUS BASE).
- 2) THE BITUMINOUS BASE UNDER AND BEHIND THE COMBINED CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 2 1/2" BITUMINOUS BASE.
- 3) A TACK COAT OF EMULSIFIED ASPHALT (SC-1H OR CSS-1H) SHALL BE APPLIED AT AN APPROXIMATE RATE OF 0.05 GALLONS PER SQUARE YARD BETWEEN EACH LIFT OF ASPHALTIC MATERIAL.
- 4) BITUMINOUS BASE AND ASPHALTIC CONCRETE WEARING SURFACE SHALL BE PLACED WITH A LAYDOWN MACHINE HAVING AUTOMATIC CONTROLS FOR LINE AND GRADE.
- 5) CONSTRUCTION JOINTS IN EACH LIFT SHALL BE STAGGERED A MINIMUM DISTANCE OF ONE (1) FOOT FROM JOINTS IN PRECEDING LIFTS AND PLACED SO THAT A JOINT WILL BE CONSTRUCTED ON THE CENTERLINE OF THE TOP LIFT.
- 6) CONTRACTOR TO BID ONLY ONE SUBGRADE TREATMENT ALTERNATE WHEN ALTERNATES ARE PROVIDED IN THE PROPOSAL AND CONTRACT. THE ALTERNATE CHOSEN BY THE SUCCESSFUL BIDDER SHALL BE USED IN CONSTRUCTING THIS PROJECT.

TRANSVERSE CONSTRUCTION JOINTS

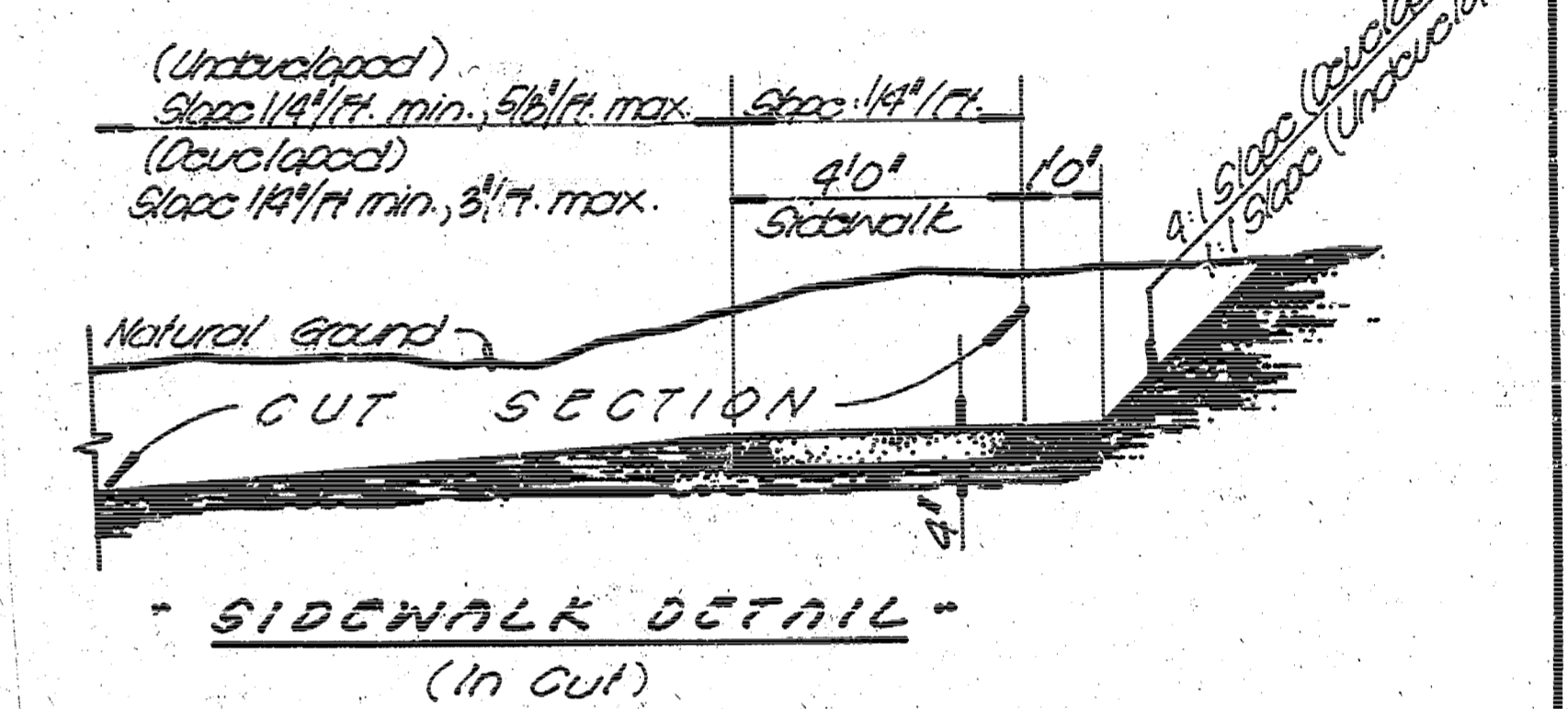
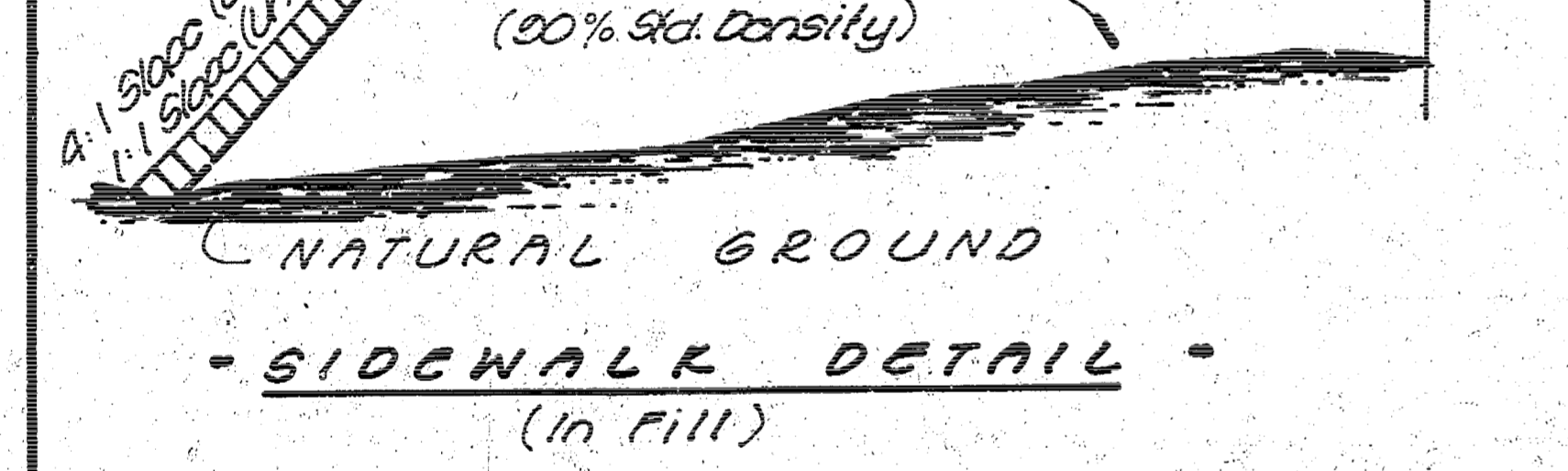
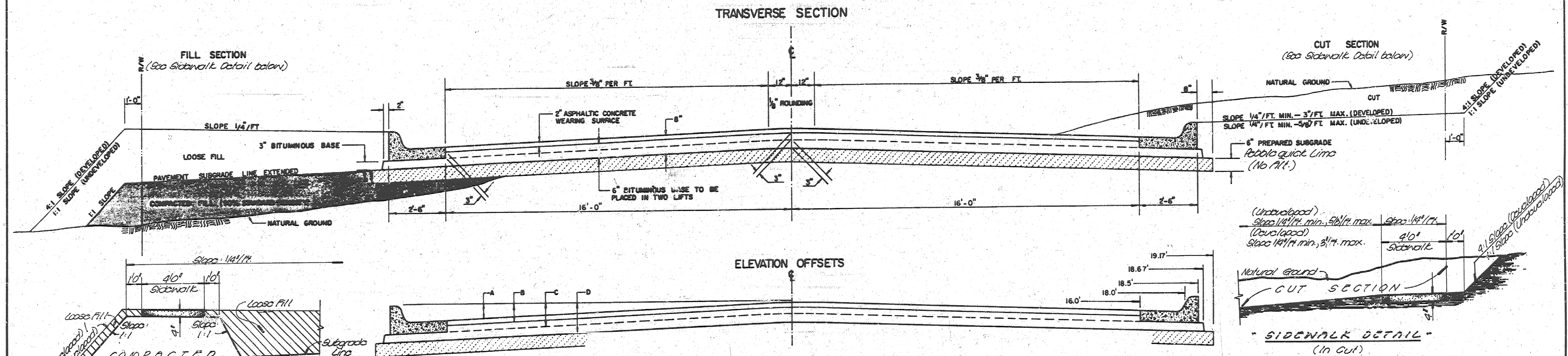


TRANSVERSE CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN FLEXIBLE BASE PAVEMENTS AT LOCATIONS WHERE PAVEMENT JOINS EXISTING FLEXIBLE BASE PAVEMENT AS SHOWN BY THE DETAIL. ALL COSTS ASSOCIATED WITH THE CONSTRUCTION OF THE TRANSVERSE JOINT SHALL BE INCLUDED IN THE BID PRICE FOR SQUARE YARDS 7" ASPHALTIC CONCRETE (5" BITUMINOUS BASE).

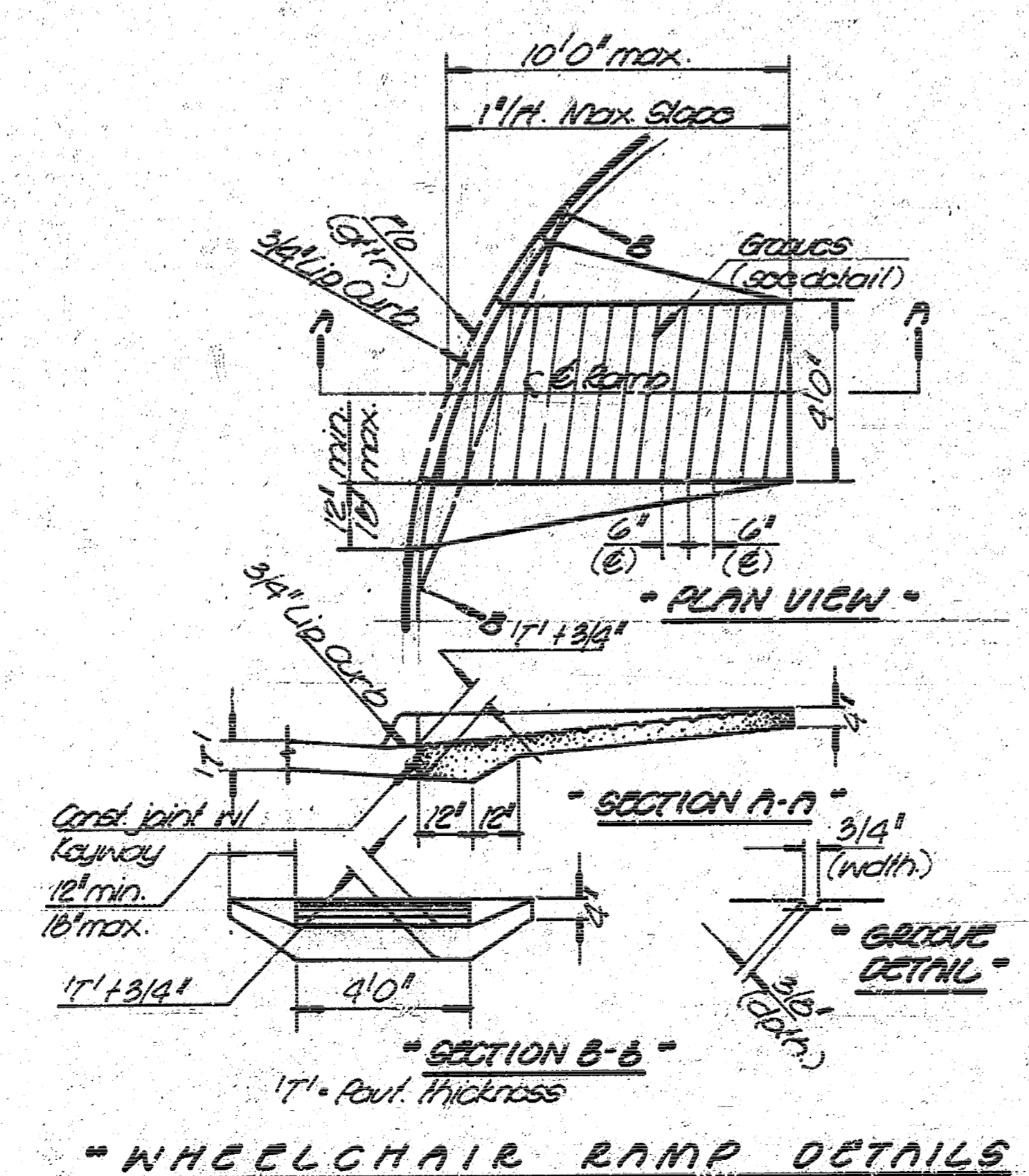
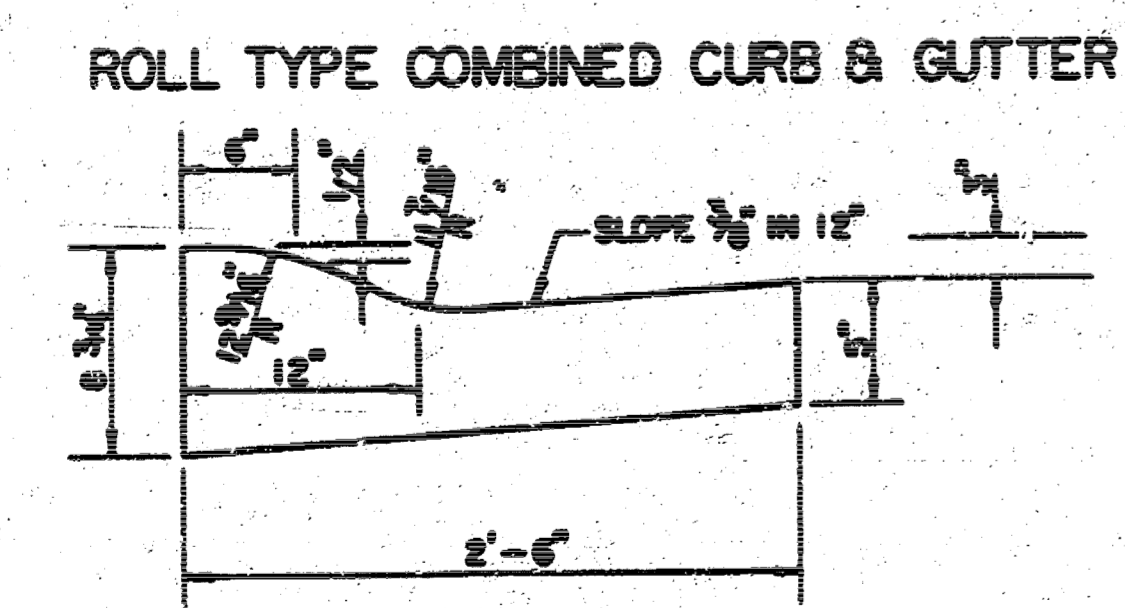
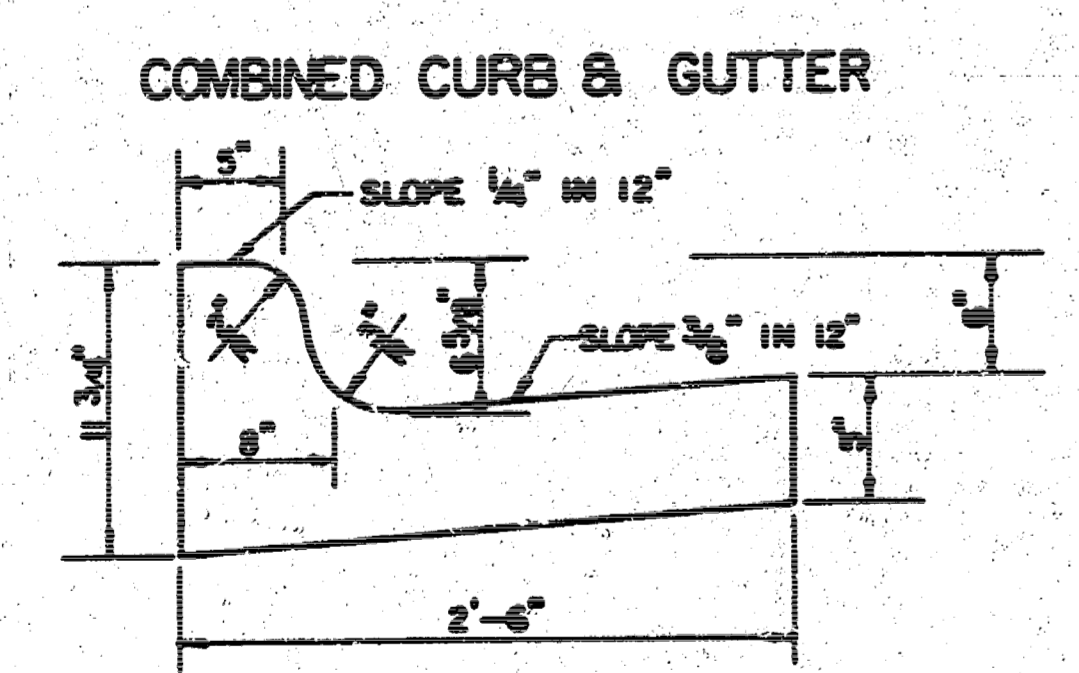
7" RESIDENTIAL ASPHALTIC CONCRETE PAVEMENT w/ 5" BITUMINOUS BASE

BAUGHMAN COMPANY, P.A. SURVEYING & ENGINEERING 3162827271 • 315 ELLIS • WICHITA, KANSAS 67211		Sheet: 2 of: 12
Design: C of W Drawn: Sp/kr Project Number: 472-76-245-81660-000-000-001	Checked: G of W Date: 6-1-20 Scale: none	Sheet: 2 of: 12

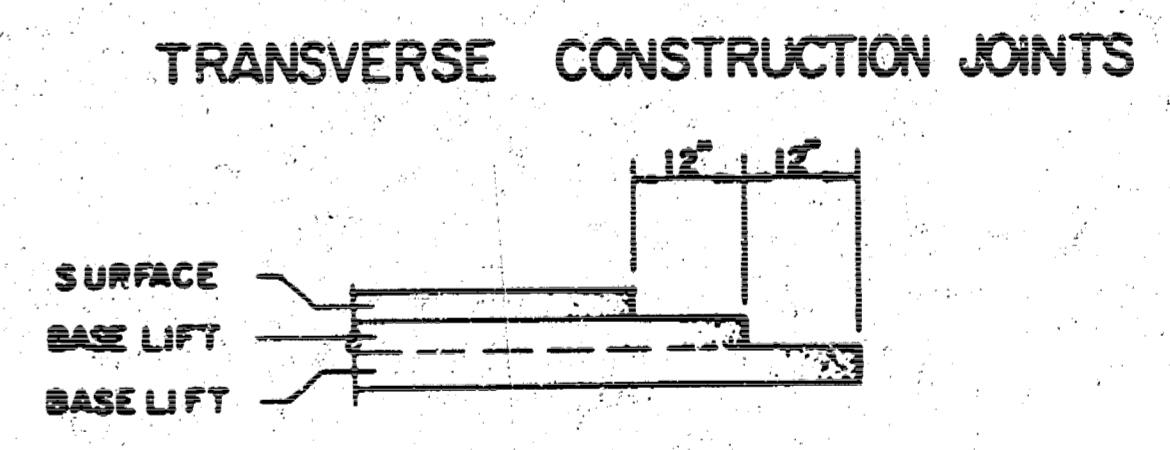
TYPICAL 37' PAVEMENT DETAILS



	DISTANCE FROM CENTERLINE (LT. & RT.)												
	0	2	4	6	8	10	12	14	16	18	18.5	18.67	19.17
A: TOP OF CURBS TO TOP OF SURFACE LIFT	.00	.05	.11	.18	.24	.30	.36	.43	.49	—	—	—	—
B: TOP OF CURBS TO TOP OF UPPER BASE LIFT	.17	.22	.28	.34	.40	.47	.53	.59	.65	—	—	—	—
C: TOP OF CURBS TO TOP OF LOWER BASE LIFT	.42	.47	.53	.59	.65	.72	.78	.84	.90	.97	.98	.99	—
D: TOP OF CURBS TO TOP OF SUBGRADE	.67	.72	.78	.84	.90	.97	1.03	1.09	1.15	1.22	1.23	1.24	1.25



- ### GENERAL NOTES
- 1) THE ASPHALTIC CONCRETE PAVEMENT BETWEEN THE COMBINED CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 8\"/>
 - 2) THE BITUMINOUS BASE UNDER AND BEHIND THE COMBINED CURB AND GUTTER SHALL BE PAID AS SQUARE YARDS OF 3\"/>
 - 3) A TACK COAT OF EMULSIFIED ASPHALT (SC-1H OR CS-1H) SHALL BE APPLIED AT AN APPROPRIATE RATE OF 0.05 GALLONS PER SQUARE YARD BETWEEN EACH LIFT OF ASPHALTIC MATERIAL.
 - 4) BITUMINOUS BASE AND ASPHALTIC CONCRETE WEARING SURFACE SHALL BE PLACED WITH A LAYDOWN MACHINE HAVING AUTOMATIC CONTROLS FOR LINE AND GRADE.
 - 5) CONSTRUCTION JOINTS IN EACH LIFT SHALL BE STAGGERED A MINIMUM DISTANCE OF ONE (1) FOOT FROM JOINTS IN PRECEDING LIFTS AND PLACED SO THAT A JOINT WILL BE CONSTRUCTED ON THE CENTERLINE OF THE TOP LIFT.
 - 6) CONTRACTOR TO BID ONLY ONE SUBGRADE TREATMENT. ALTERNATE WHEN ALTERNATES ARE PROVIDED IN THE PROPOSAL AND CONTRACT. THE ALTERNATE CHOSEN BY THE SUCCESSFUL BIDDER SHALL BE USED IN CONSTRUCTING THIS PROJECT.



TRANSVERSE CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN FLEXIBLE BASE PAVEMENTS AT LOCATIONS WHERE PAVEMENT JOINTS EXISTING FLEXIBLE BASE PAVEMENT AS SHOWN BY THE DETAIL. ALL COSTS ASSOCIATED WITH THE CONSTRUCTION OF THE TRANSVERSE JOINT SHALL BE INCLUDED IN THE BID PRICE FOR SQUARE YARDS 8\"/>

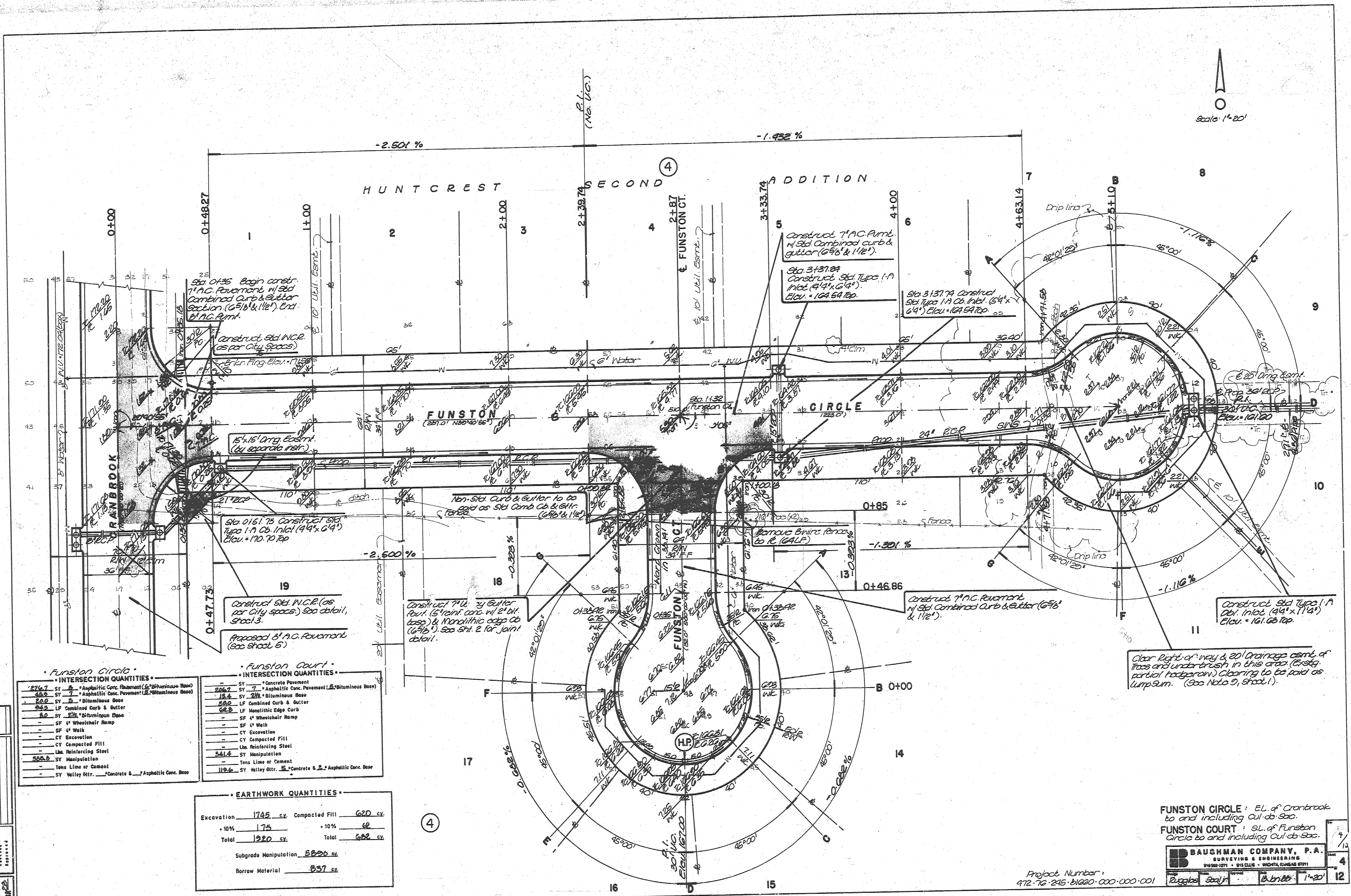
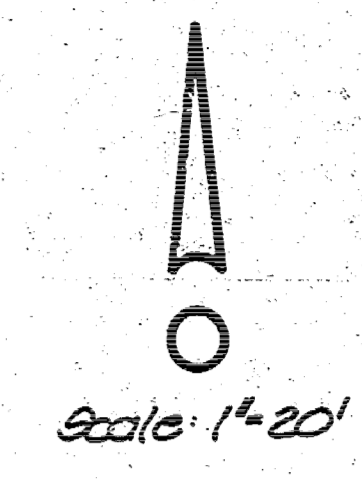
8\"/> RESIDENTIAL ASPHALTIC CONCRETE PAVEMENT w/ 6\"/> BITUMINOUS BASE

BAUGHMAN COMPANY, P.A.
SURVEYING & ENGINEERING
316282-7271 • 315 ELLIS • WICHITA, KANSAS 67211

Design: C of W Date: 10/1/11 Approved: C of W Date: 10/1/11 Scale: none

Project Number: 472-76-245-81660-000-000-001

Sheet: 3 of 12



Funston Circle

INTERSECTION QUANTITIES	
276.7	SY 2" Asphaltic Conc. Pavement (2" Bituminous Base)
45.9	SY 7" Asphaltic Conc. Pavement (2" Bituminous Base)
82.0	SY 5" Bituminous Base
64.5	LF Combined Curb & Gutter
5.0	SY 2 1/2" Bituminous Base
-	SF 4" Wheelchair Ramp
-	SF 4" Walk
-	CY Excavation
-	CY Compacted Fill
-	Lbs. Reinforcing Steel
555.6	SY Manipulation
-	Tons Lime or Cement
-	SY Valley Gtr. Concrete & Asphaltic Conc. Base

Funston Court

INTERSECTION QUANTITIES	
266.7	SY 2" Asphaltic Conc. Pavement (2" Bituminous Base)
18.5	SY 2 1/2" Bituminous Base
5.0	LF Combined Curb & Gutter
64.5	LF Manolithic Edge Curb
-	SF 4" Wheelchair Ramp
-	SF 4" Walk
-	CY Excavation
-	CY Compacted Fill
-	Lbs. Reinforcing Steel
341.4	SY Manipulation
-	Tons Lime or Cement
118.6	SY Valley Gtr. Concrete & Asphaltic Conc. Base

EARTHWORK QUANTITIES

Excavation	1745	Compacted Fill	620
10%	175	10%	62
Total	1920	Total	682
Subgrade Manipulation	5826		
Borrow Material	837		

Clear Right-of-way & 20' Drainsage cont. of Trees and underbrush in this area. (Cresty partial hedge-row). Clearing to be paid as lump sum. (See Note 9, Sheet 1).

FUNSTON CIRCLE: EL. of Cranbrook to and including Curb & Sid.

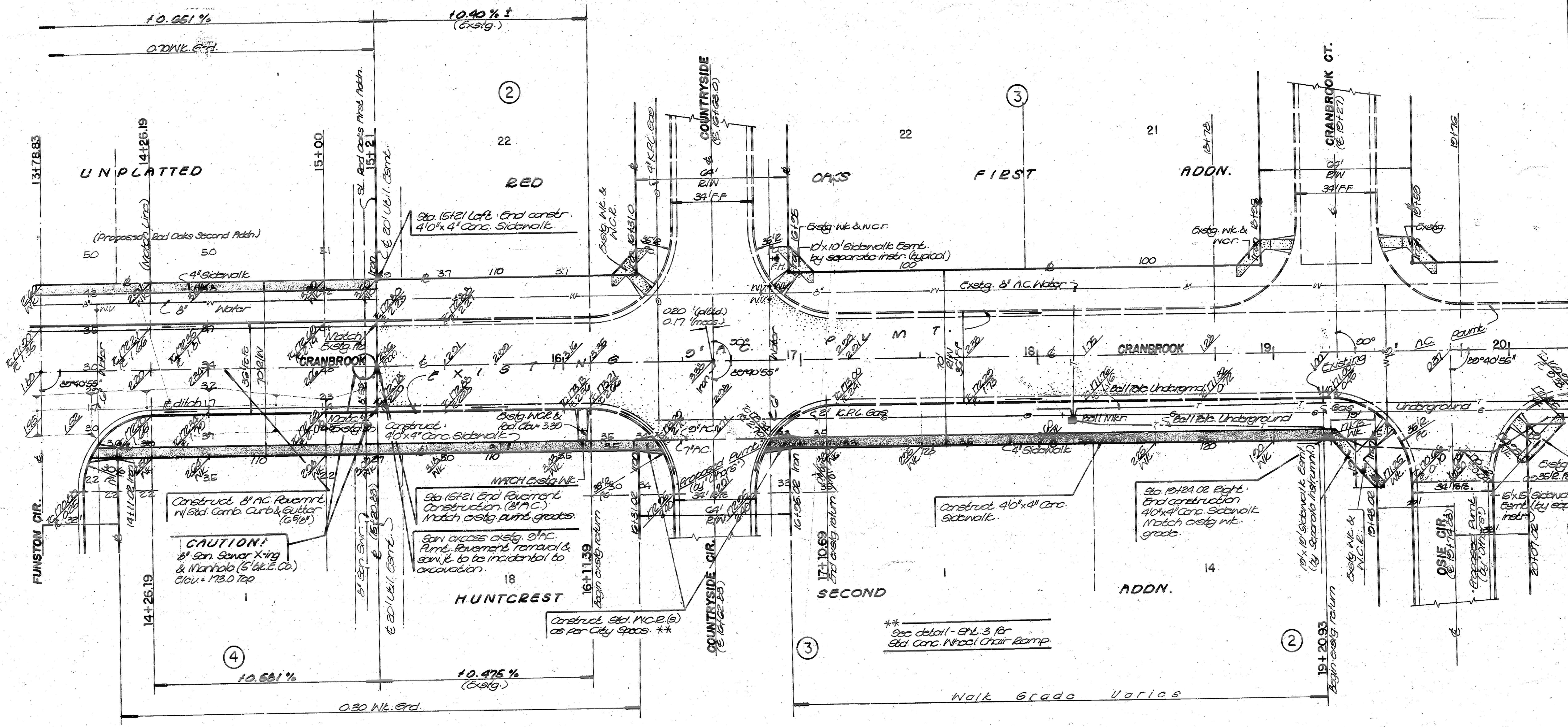
FUNSTON COURT: SL. of Funston Circle to and including Curb & Sid.

BAUGHMAN COMPANY, P.A.
SURVEYING & ENGINEERING
2100 W. 10th St. - SUITE 100 - WICHITA, KANSAS 67211

Project Number: 412-76-245-01000-000-000-001

Scale: 1"=20'

Sheet: 4 of 12



CAUTION!
 8" San. Sewer King & Manhole (5' bt. E. Co.)
 Elev. = 173.0 Top

Sta. 15+21.02 End Pavement Construction (B.M.C.)
 Match existing pavement grades.
 San. access existing 8" C. Pavement removal & service to be incidental to excavation.

Construct 8" N.C.R. (6) as per City Specs. **

**
 See detail - 976.3 for 8" Conc. In-pact Chair Ramp

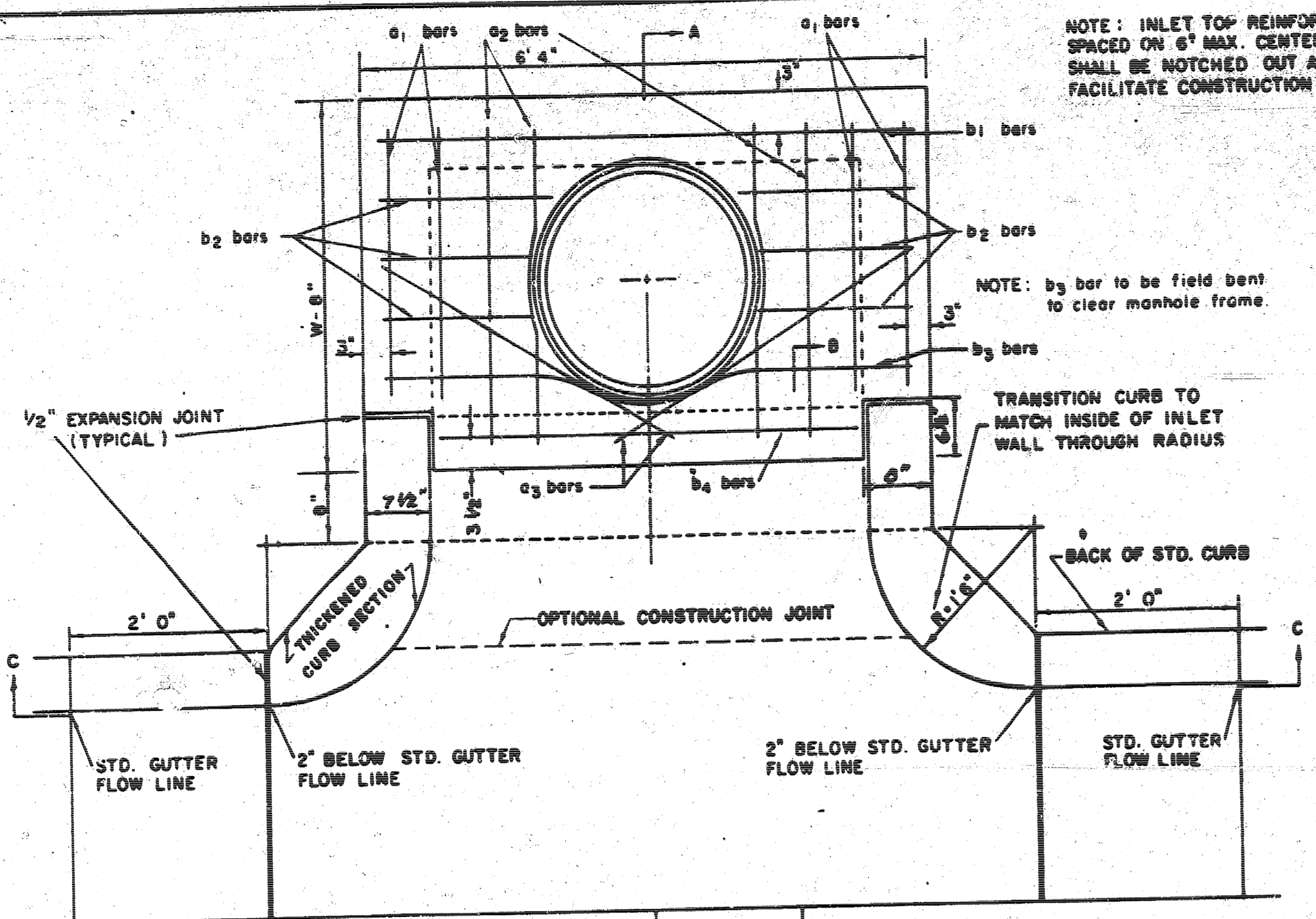
Note: For work for sidewalk construction Sta. 15+20.23 to Sta. 19+24.02 shall be incidental to the bid item for 4" Conc. sidewalk & Wheel-chair ramps.

Sidewalk (N.S. Cranbrook):
 A point 65113' So. of S.L. Red Oaks First Addn. to S.L. Red Oaks First Addn.

Sidewalk (E.S. Cranbrook):
 From S.W. Cor. Lot 23, Blk. 4, Huntcrest Second Addn. to S.L. Red Oaks First Addn.
 From S.W. Cor. Lot 23, Blk. 4, Huntcrest Second Addn. to N.L. Osie Circle.
 Project Number: 472-76-245-BIGGO-000-000-001

CRANBROOK : From S.W. Cor. Lot 23, Blk. 4, Huntcrest Second Addn. to S.L. Red Oaks First Addn.

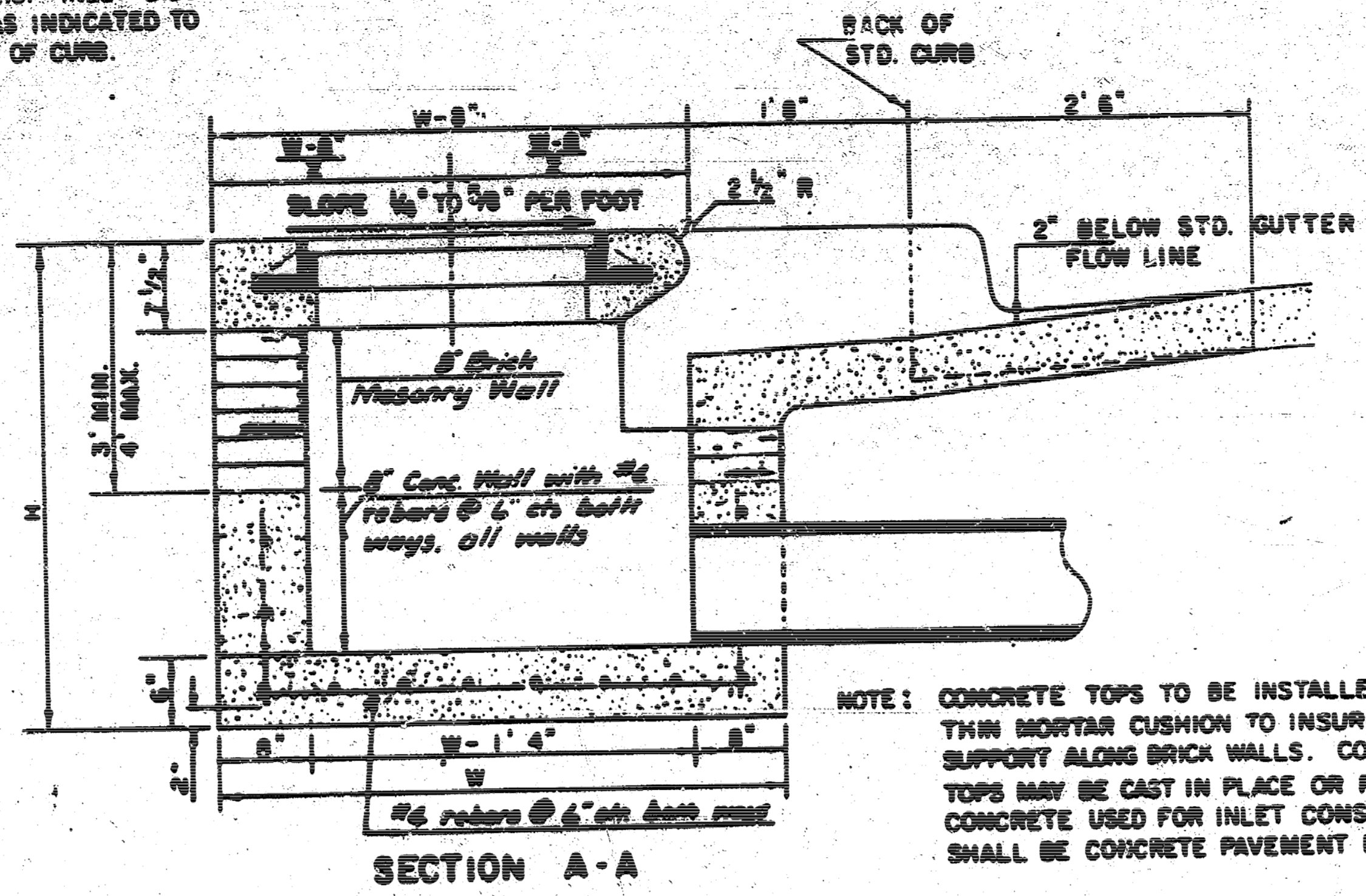
BAUGHMAN COMPANY, P.A.	6
SURVEYING & ENGINEERING	12
123456789 • 112345 • WICHITA, KANSAS 67211	
Project: 472-76-245-BIGGO-000-000-001	11-20'



NOTE: INLET TOP REINFORCING SHALL BE SPACED ON 6" MAX. CENTERS. INLET LIDS SHALL BE NOTCHED OUT AS INDICATED TO FACILITATE CONSTRUCTION OF CURB.

NOTE: b₃ bar to be field bent to clear manhole frame.

TRANSITION CURB TO MATCH INSIDE OF INLET WALL THROUGH RADIUS

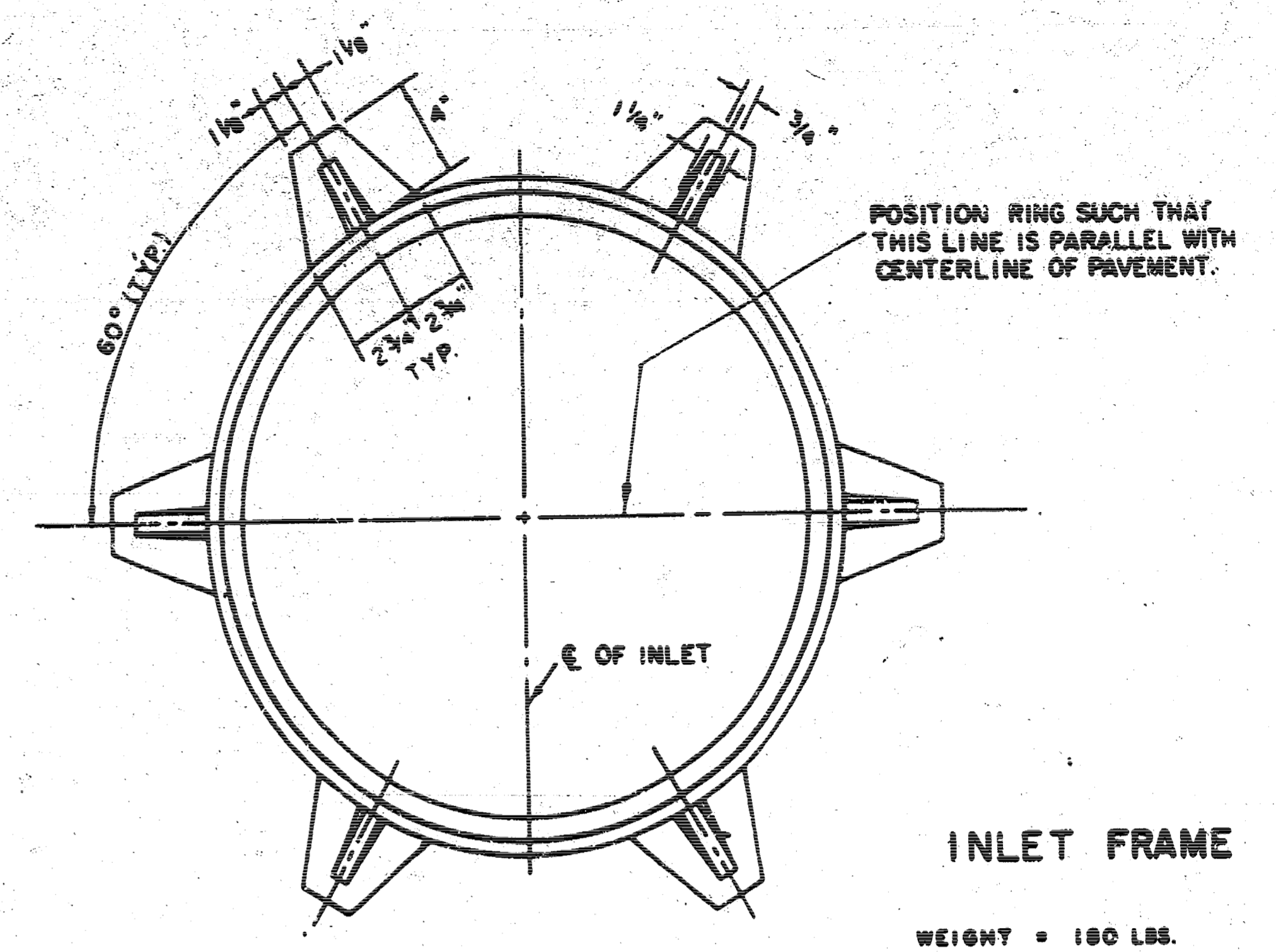


NOTE: CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING 6" BRICK MASONRY WALLS BETWEEN THE CONCRETE INLET BASE AND TOP ON THIS INLET WHEN W = 6'4" AND H = 7'0" OR LESS.

ADDITIONAL CURB AND GUTTER CONSTRUCTION NECESSARY TO CORRECT SET-BACK INLET TO PAVEMENT WILL BE PAID FOR AT THE UNIT PRICE BID FOR EACH INLET REWORK.

INLET INVERT SHALL BE SHAPED WITH 8 SACK SAND MIX CONCRETE TO CREATE PLAN CHANNELS AND TO INCREASE HYDRAULIC EFFICIENCY SUCH THAT THE INLET WILL BE SELF-CLEANING BETWEEN ALL INLET AND/OR OUTLET PIPES.

THE ENDS OF ALL PIPES INSTALLED IN INLETS SHALL BE CUT FLUSH WITH THE INSIDE FACE OF THE INLET WALL.



SEE CITY OF WICHITA STANDARD MANHOLE FRAME AND COVER DETAIL SHEET FOR COVER DETAILS TO BE USED WITH INLET FRAME.

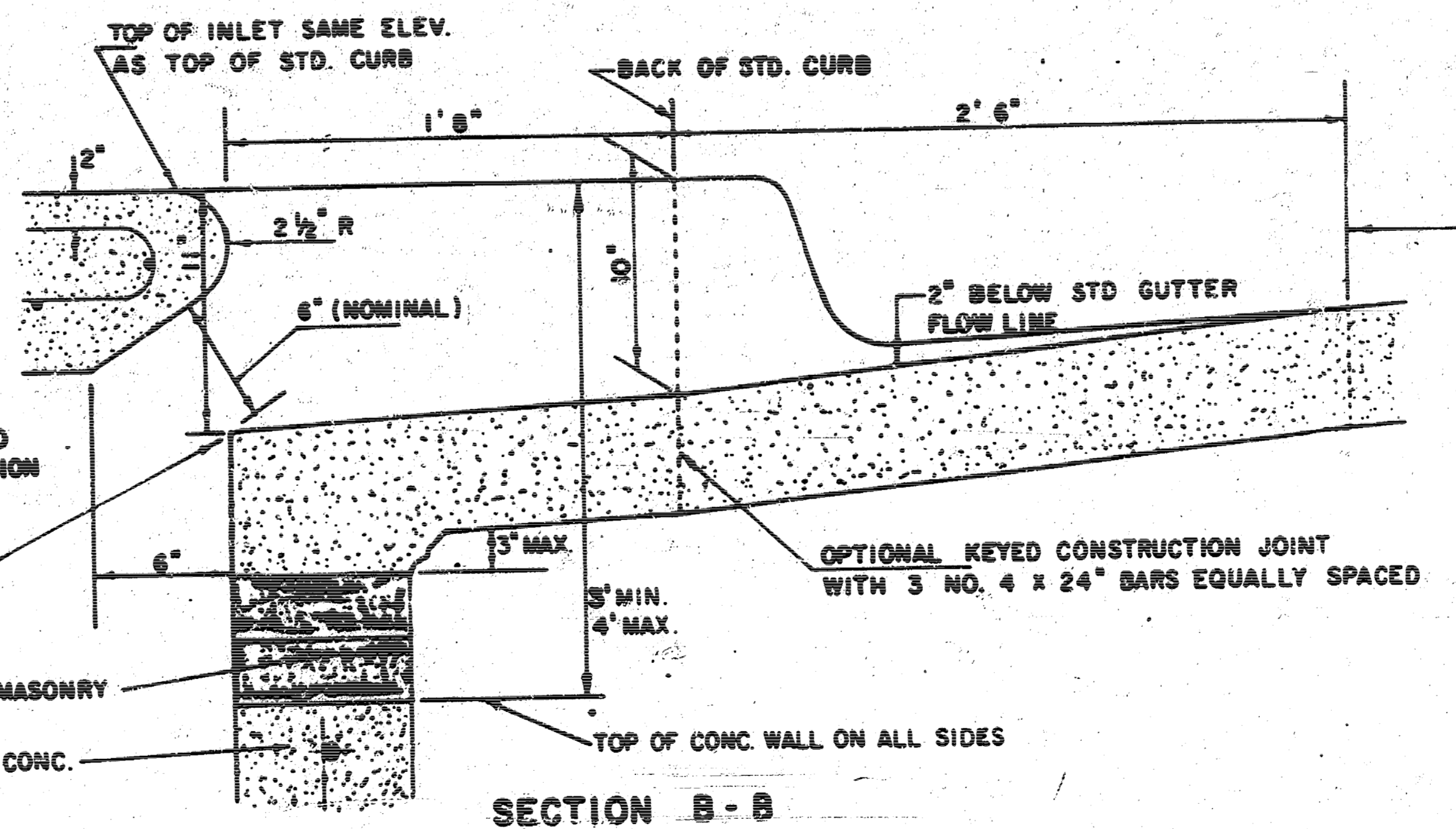
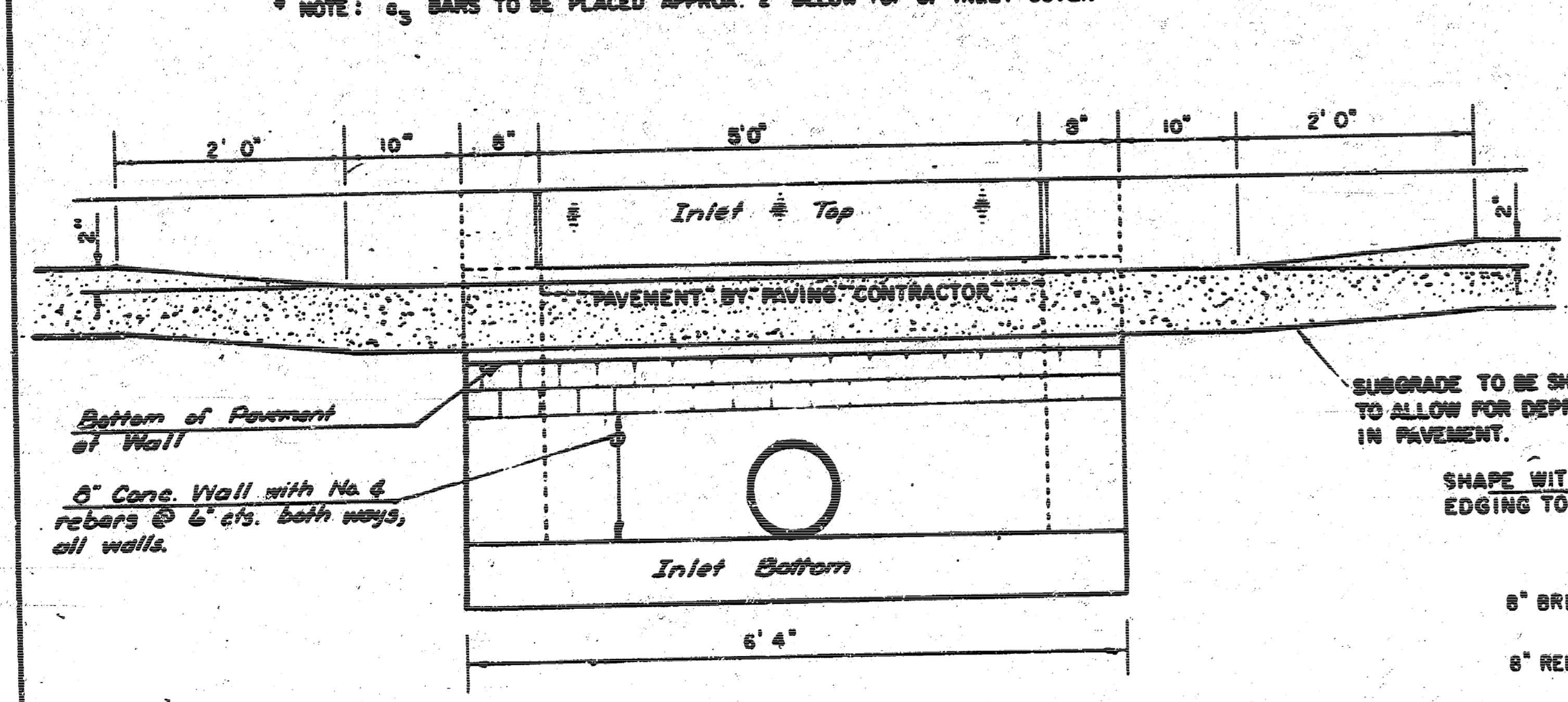
STEEL SCHEDULE

BAR NUMBER	a ₁	a ₂	a ₃	b ₁	b ₂	b ₃	b ₄	WT. LBS.
SIZE	"4	"4	"4	"4	"4	"4	"4	
W=4'4"	5'7"	6'7"	4'0"	6'1"	-	-	-	60±
W=5'4"	7'7"	8'7"	5'0"	6'1"	-	-	-	81±
W=6'4"	9'7"	10'7"	6'0"	6'1"	-	-	-	101±
W=7'4"	11'7"	12'7"	7'0"	6'1"	-	-	-	121±
W=8'4"	13'7"	14'7"	8'0"	6'1"	1'9"	6'2"	4'8"	141±

STANDARD CURB INLET PRECAST TOPS

W	PRE-CAST TOP SIZE	PIPE SIZE	CU. YD. CONC.
4' 4"	5' 6" x 6' 4" x 7 1/2"	21" Ø SMALLER	0.38 ±
5' 4"	6' 6" x 6' 4" x 7 1/2"	24" Ø 30"	0.51 ±
6' 4"	7' 6" x 6' 4" x 7 1/2"	28" Ø 42"	0.64 ±
7' 4"	8' 6" x 6' 4" x 7 1/2"	40" Ø 54"	0.77 ±
8' 4"	9' 6" x 6' 4" x 7 1/2"	60" Ø 66"	0.90 ±

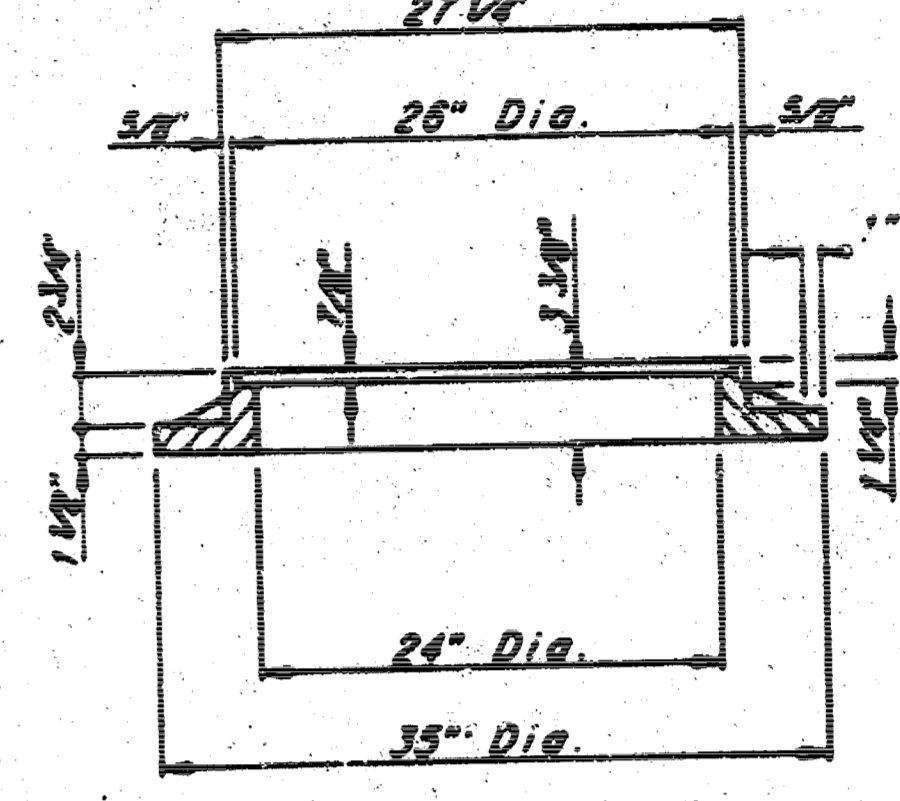
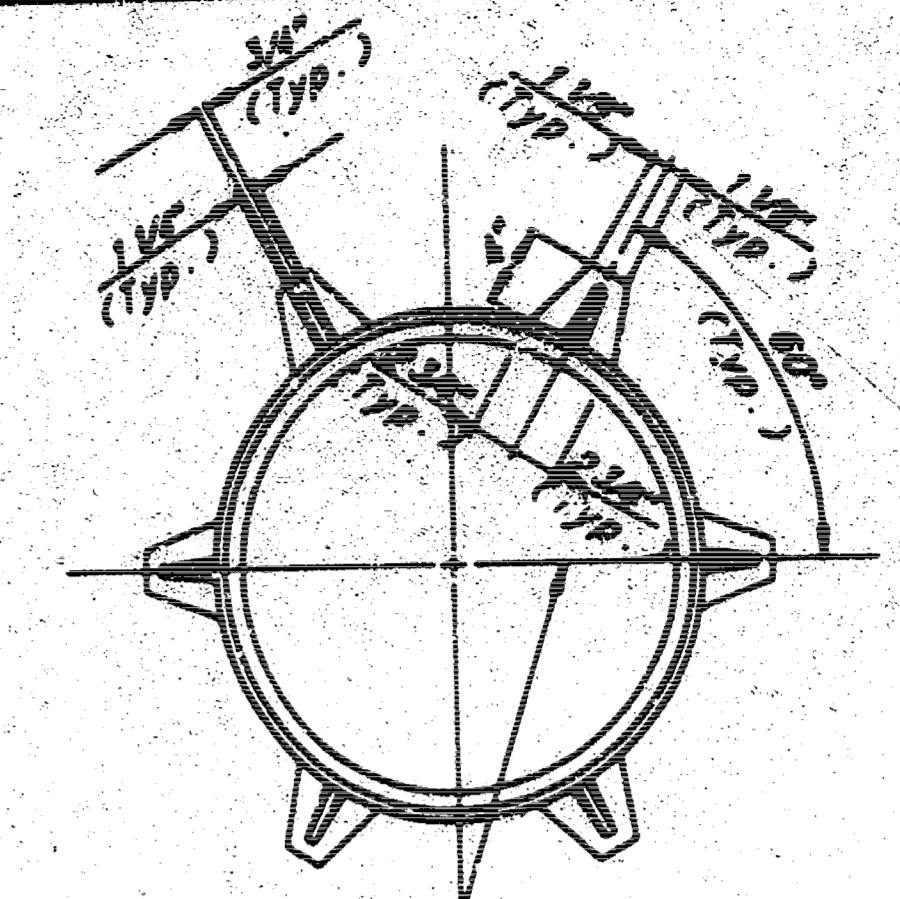
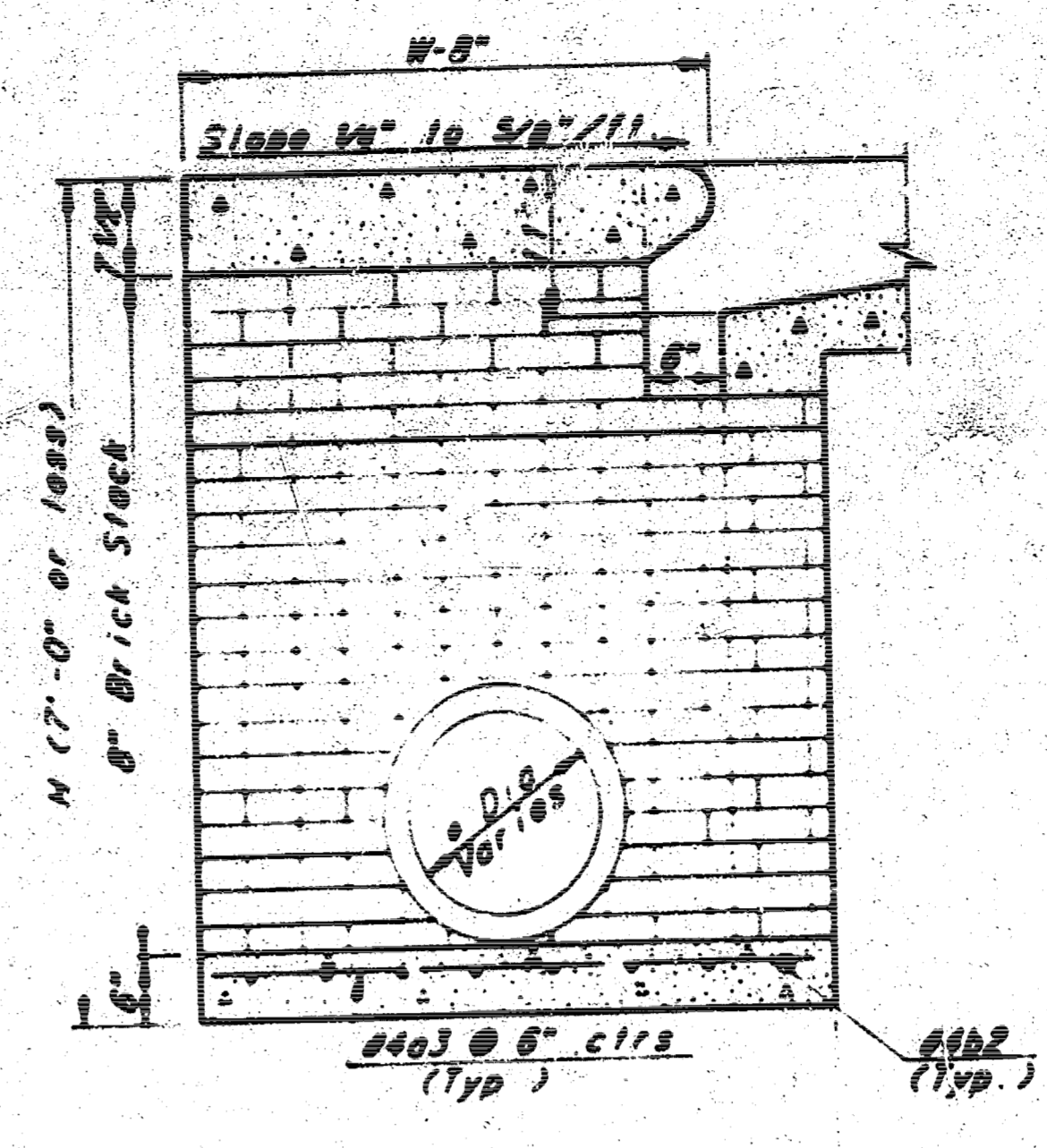
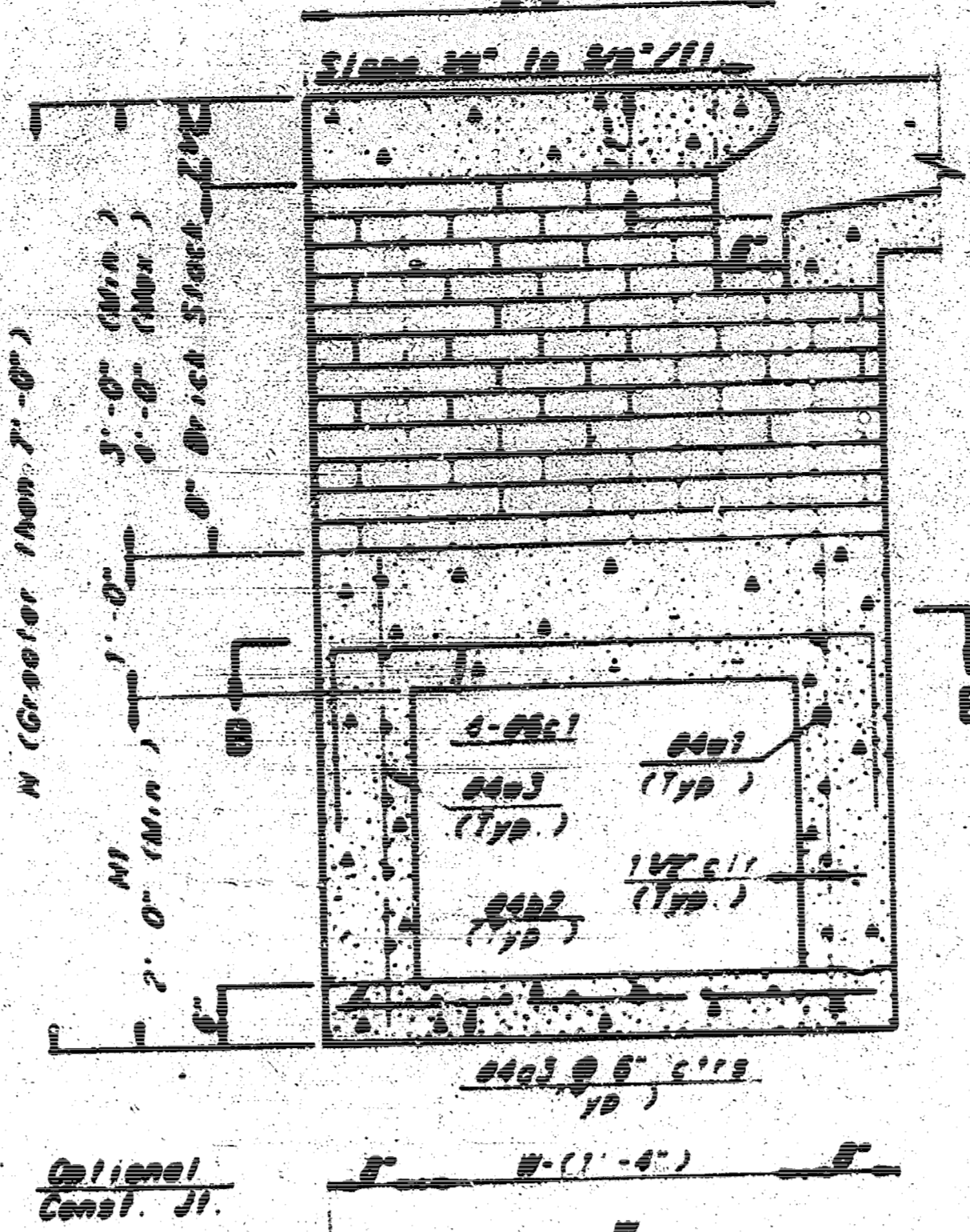
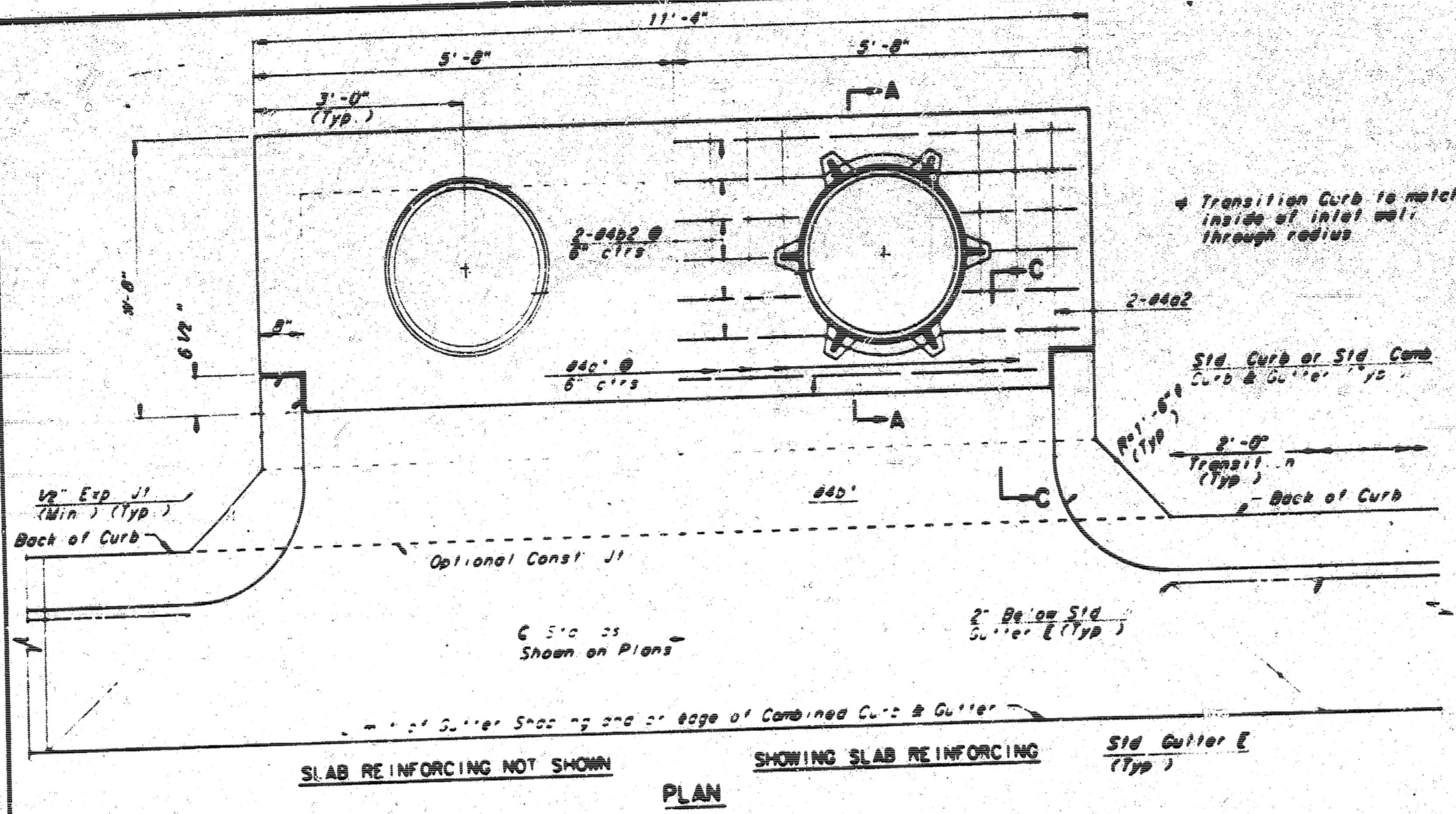
NOTE: a₃ BARS TO BE PLACED APPROX. 2" BELOW TOP OF INLET COVER



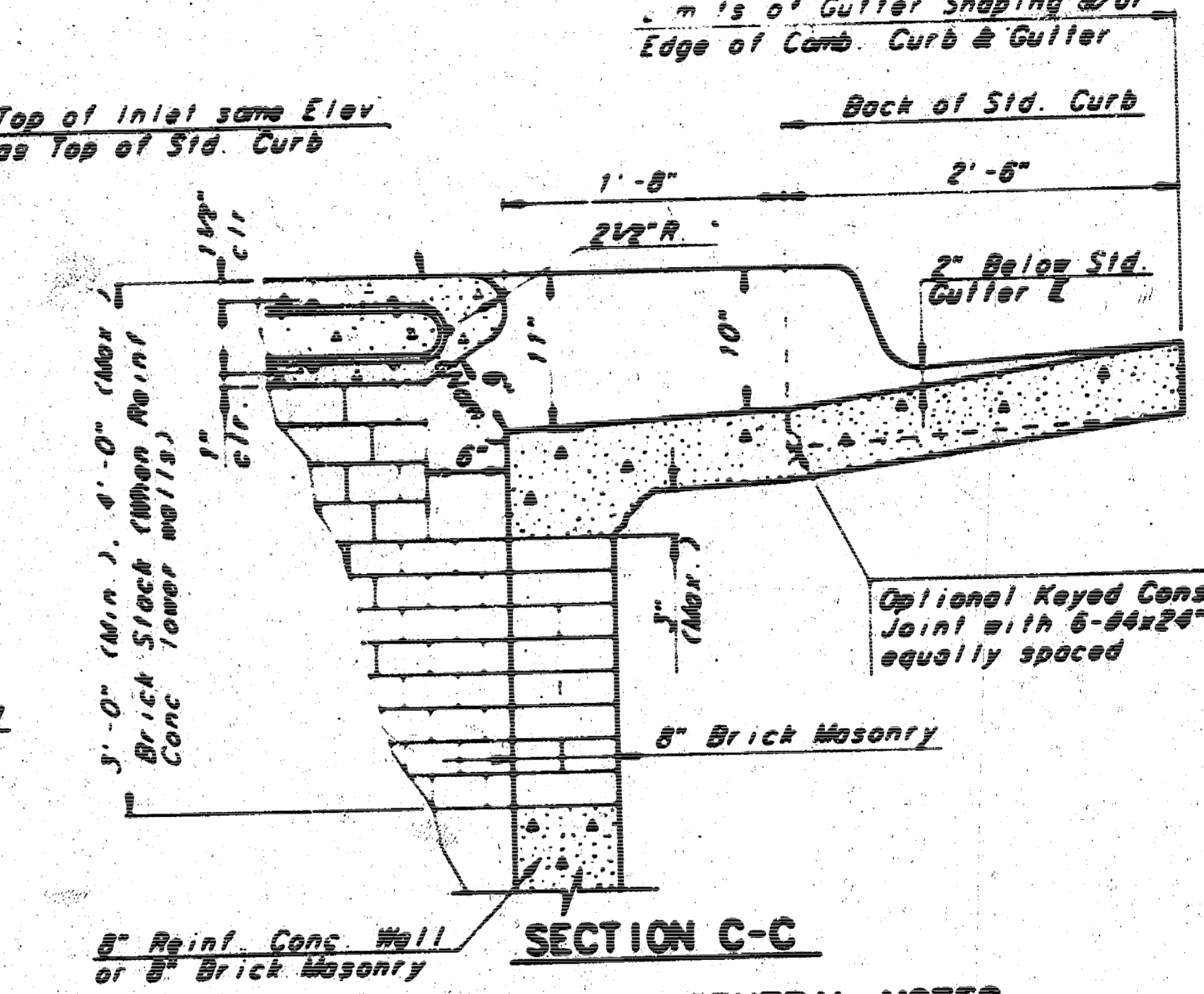
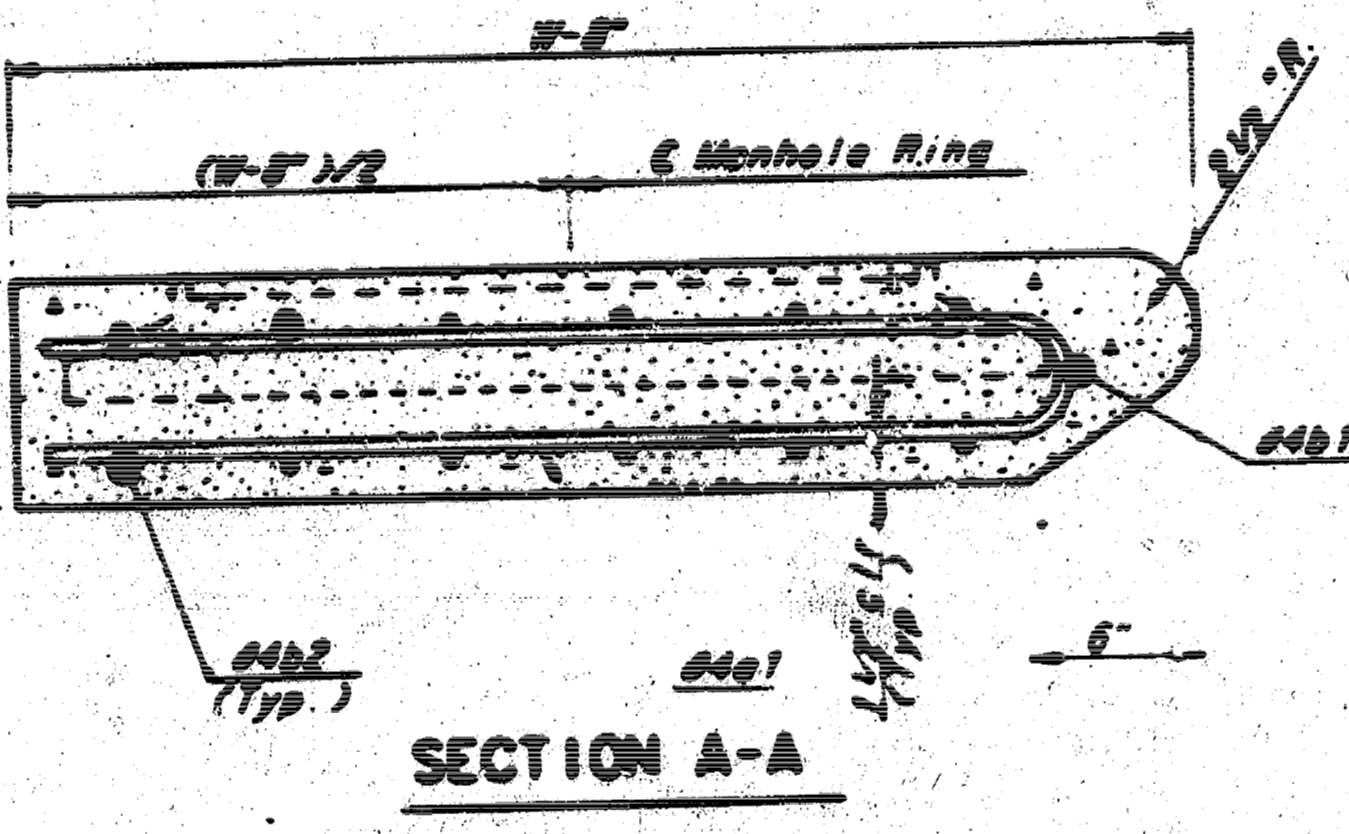
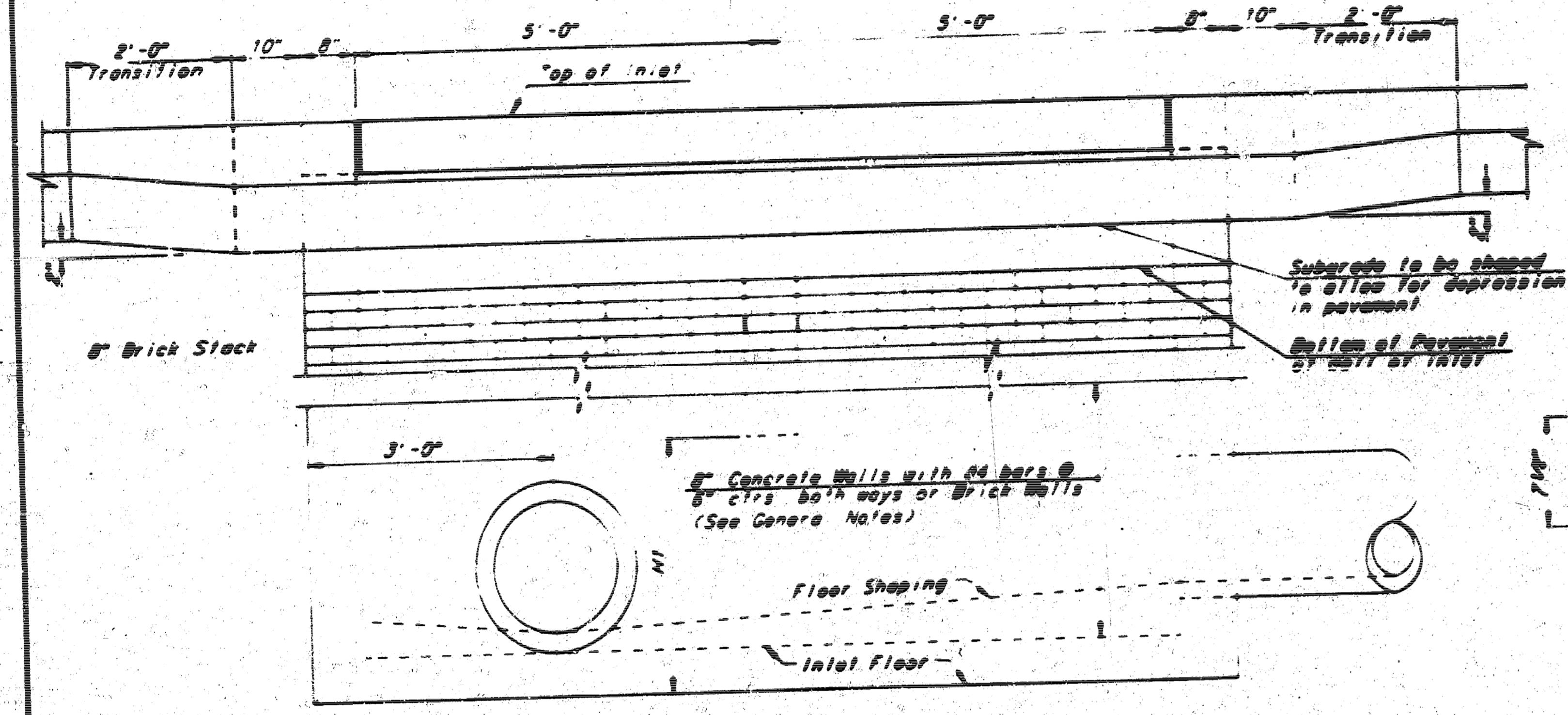
STANDARD TYPE I-A CURB INLET DETAIL
CITY OF WICHITA, KANSAS
Inlet Opening = 6" x 5'0"

BAUGHMAN COMPANY, P.A.
SURVEYING & ENGINEERING
316262-7271 • 315 ELLIS • WICHITA, KANSAS 67202

Design: C of W
Drawn: C of W
Date: 12-21-84
Scale: 1/2" = 1'-0"
Sheet: 8 of 12
Project Number: 472-76-245-81660-000-001

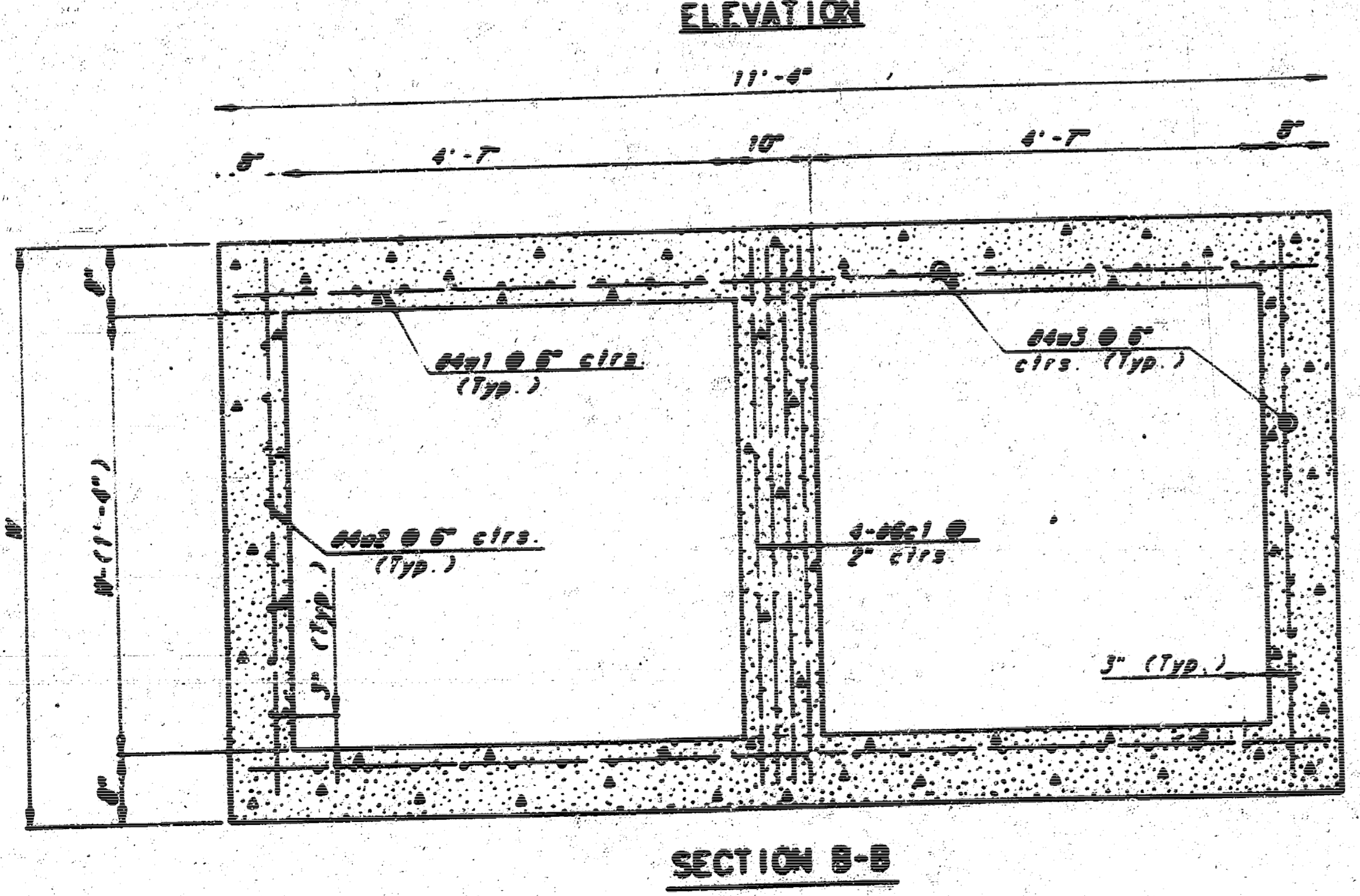
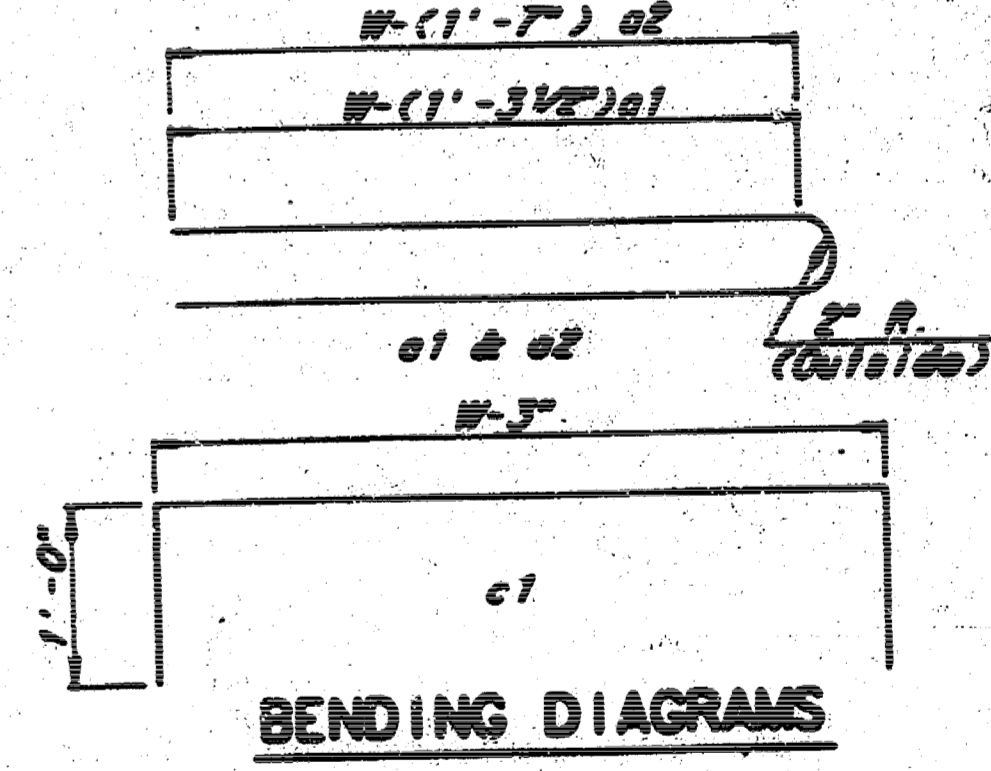


See City of Wichita Standard Manhole Frame and Cover Detail Sheet for Cover Details to be used with Inlet Frame.



GENERAL NOTES

- THE CONTRACTOR SHALL BE REQUIRED TO CONSTRUCT 8" BRICK MASONRY WALLS BETWEEN THE CONCRETE INLET BASE AND TOP ON THIS INLET WHEN W IS 4'-0" OR LESS AND H IS 7'-0" OR LESS. THE OUTSIDE INLET WALLS BELOW THE BRICK STACK SHALL BE REINFORCED CONCRETE CONSTRUCTION AND THE CENTER WALL SHALL BE OF MASONRY CONSTRUCTION AS SHOWN FOR THE MASONRY WALL OPTION.
- INLET INVERT SHALL BE SHAPED WITH 3 SAND MIX CONCRETE TO CREATE FLOW CHANNELS AND TO INCREASE HYDRAULIC EFFICIENCY SUCH THAT THE INLET WILL BE SELF CLEANING BETWEEN ALL INLET AND/OR OUTLET PIPES.
- CONCRETE TOPS TO BE INSTALLED ON THIN MORTAR CUSHION TO INSURE FULL SUPPORT ALONG BRICK WALLS. CONCRETE TOPS MAY BE CAST IN PLACE OR PRECAST. CONCRETE USED FOR INLET CONSTRUCTION SHALL BE CONCRETE PAVEMENT MIX.
- INLET TOP REINFORCING SHALL BE SPACED ON 6" MAX CENTERS. INLET LIDS SHALL BE NOTCHED OUT AS INDICATED TO FACILITATE CONSTRUCTION OF CURB BARS IN INLET TOP TO BE FIELD BENT OR CUT TO CLEAR MANHOLE RING.
- THE ENDS OF ALL PIPES INSTALLED IN INLETS SHALL BE CUT OFF FLUSH WITH THE INSIDE FACE OF THE INLET WALL.



SLAB AND FLOOR REINFORCING											
		W=4'-4"		W=5'-0"		W=6'-4"		W=7'-4"		W=8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
a1	#4	13	8'-7 1/2"	13	8'-7 1/2"	13	10'-7 1/2"	13	12'-7 1/2"	13	14'-7 1/2"
a2	#4	2	8'-0"	2	8'-0"	2	10'-0"	2	12'-0"	2	14'-0"
a3	#4	20	4'-1"	20	5'-1"	20	6'-1"	20	7'-1"	20	8'-1"
b1	#4	1	9'-8"	1	8'-8"	1	9'-8"	1	9'-8"	1	9'-8"
a&b	#4	18	11'-1"	24	11'-1"	30	11'-1"	36	11'-1"	42	11'-1"

WALL REINFORCING											
		W=4'-4"		W=5'-0"		W=6'-4"		W=7'-4"		W=8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
c1	#4	4	8'-1"	4	7'-1"	4	8'-1"	4	9'-1"	4	10'-1"
w1	#4	0	11'-1"	0	11'-1"	0	11'-1"	0	11'-1"	0	11'-1"
w2	#4	0	4'-1"	0	5'-1"	0	6'-1"	0	7'-1"	0	8'-1"
w3	#4	0	0	0	0	0	0	0	0	0	0

Field bond or cut reinforcing as required for clearance
 ① #4(11'-5") @ 4 (11'-5") Rounded down to nearest 0.5"
 ② #4(11'-16") ③ 11'-16")

STANDARD TYPE I-A CURB INLET DETAIL
 CITY OF WICHITA, KANSAS
 Inlet Opening = 6" x 10' 0"

BAUGHMAN COMPANY, P.A.
 SURVEYING & ENGINEERING
 315262-7271 • 315 ELLIS • WICHITA, KANSAS 67211

Project: C of W 12-21-84
 Sheet: 9 of 12
 Project Number: 472-76-245-81660-000-000-001

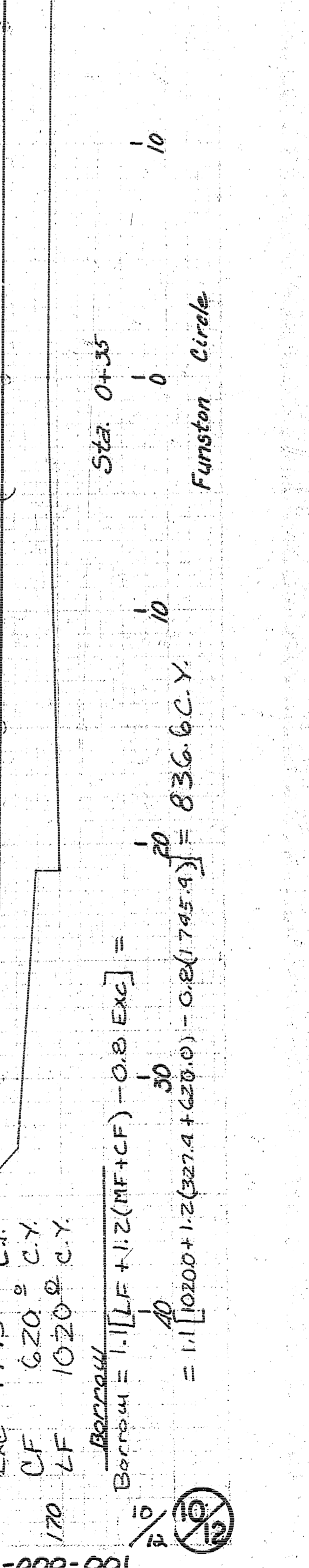
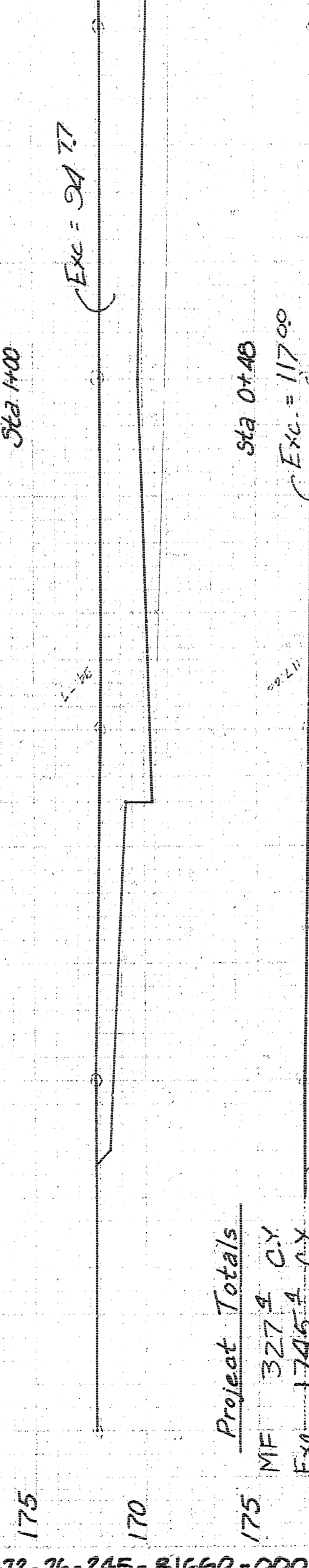
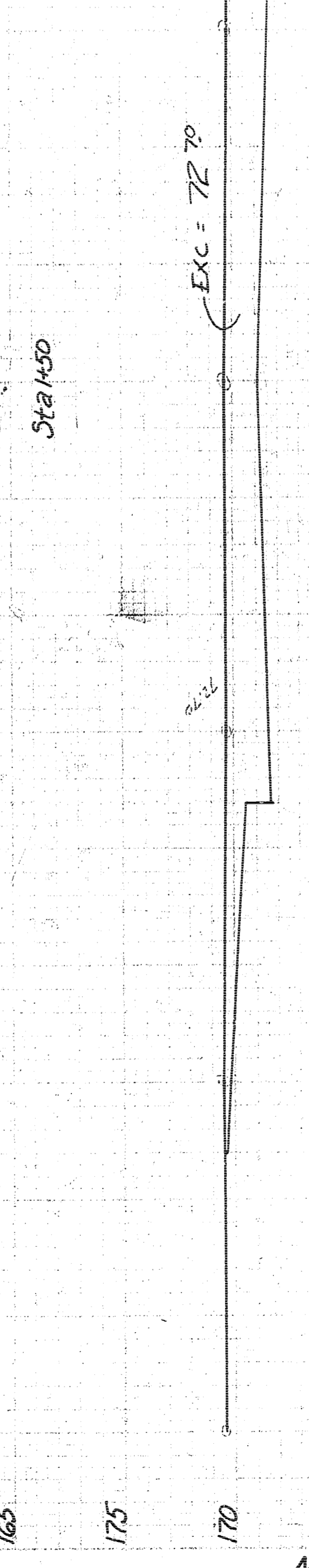
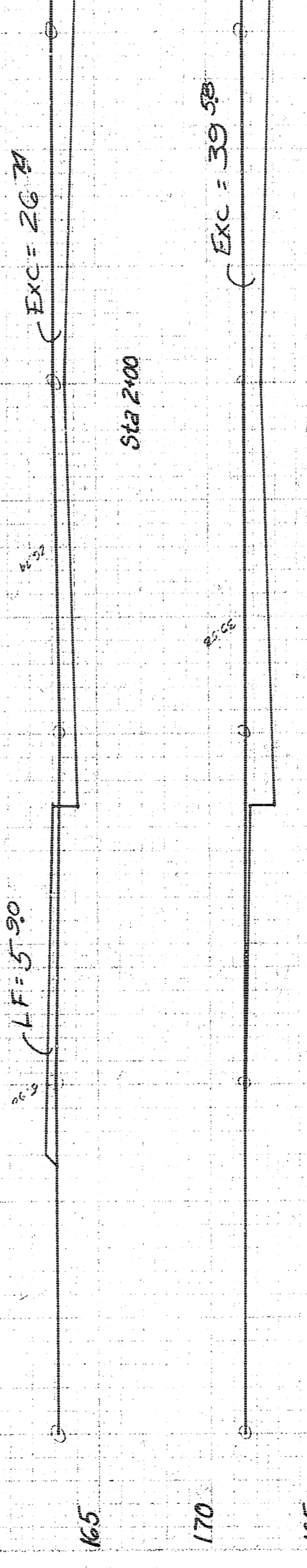
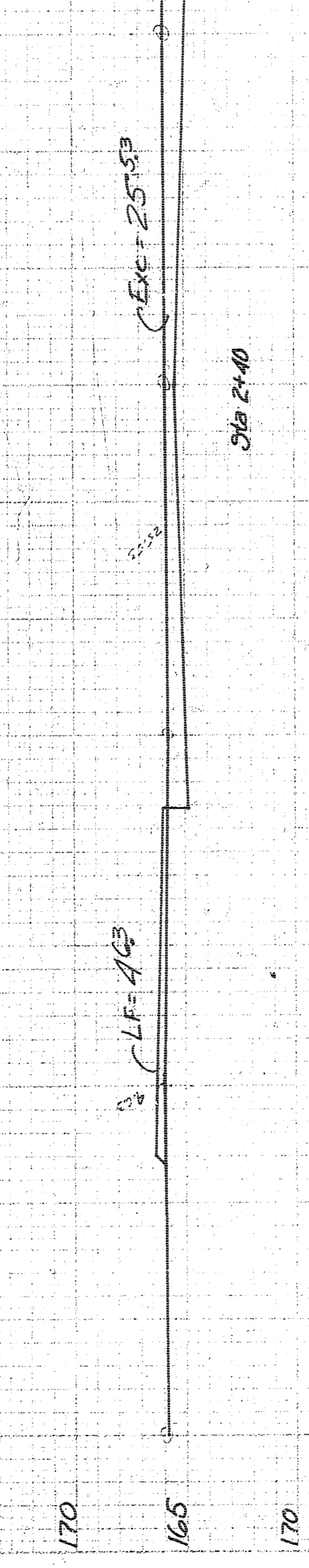
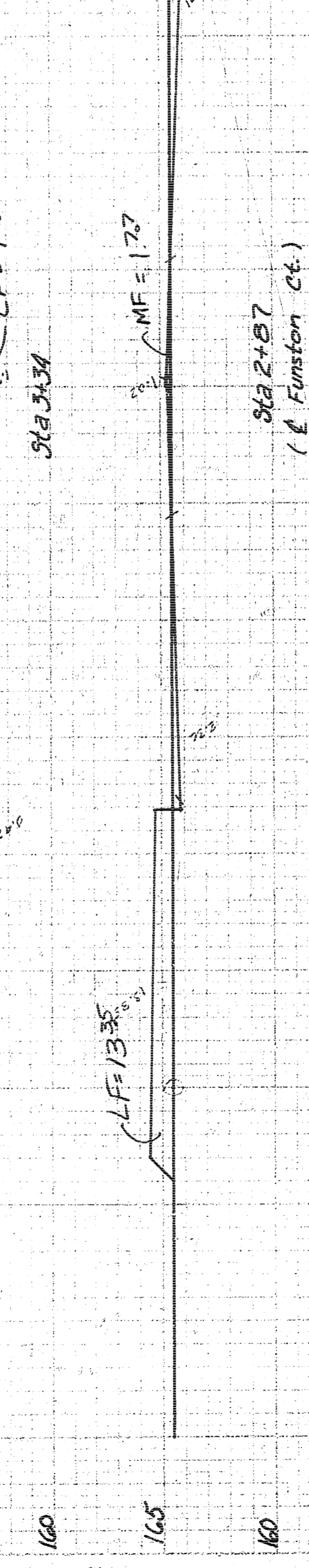
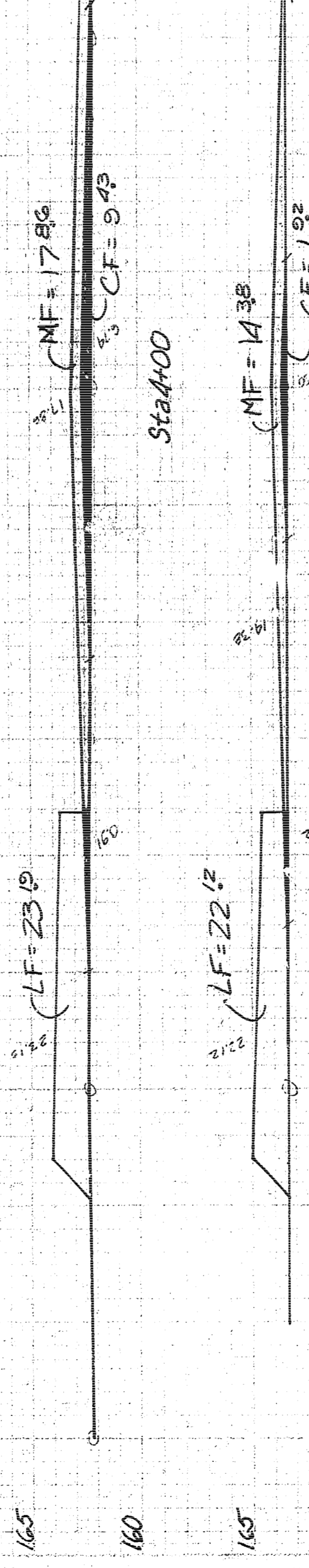
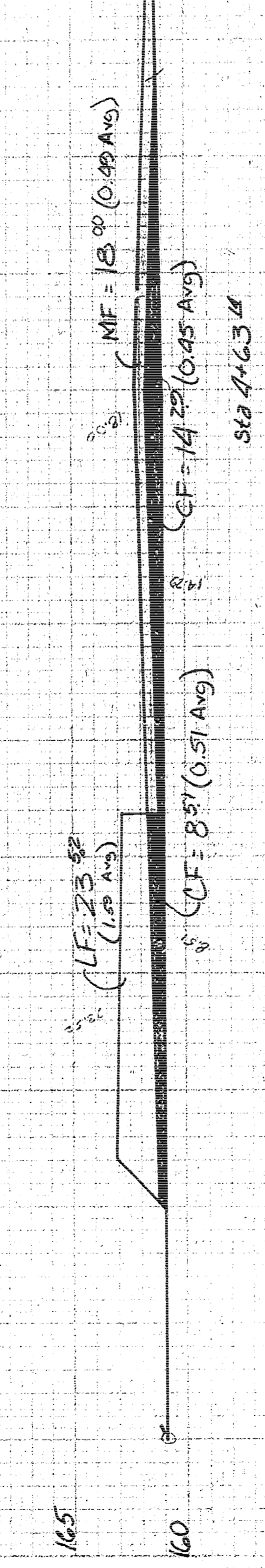
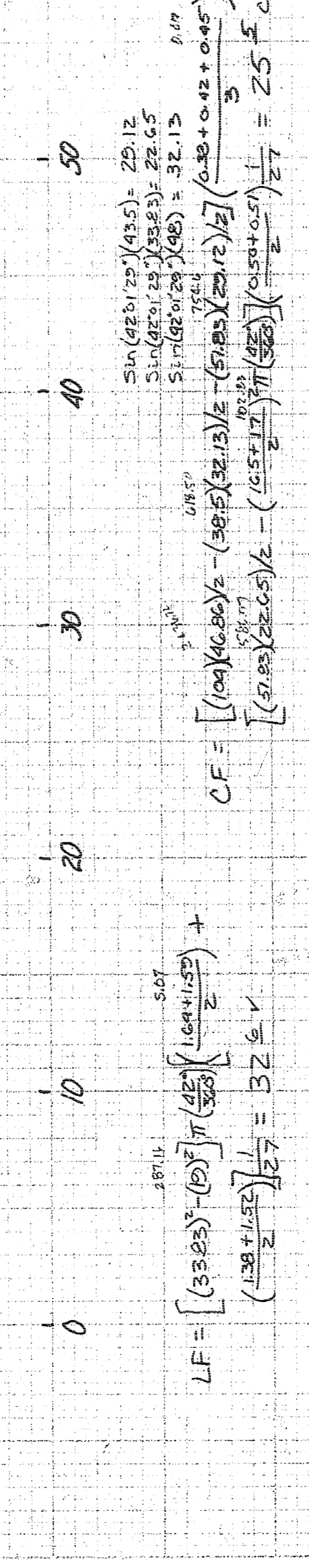
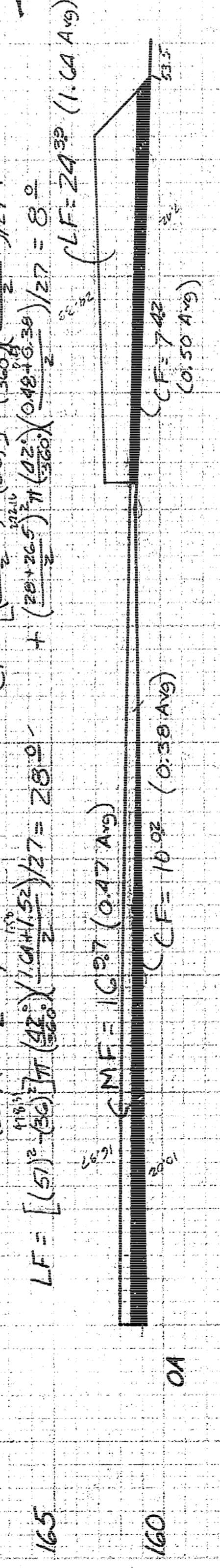
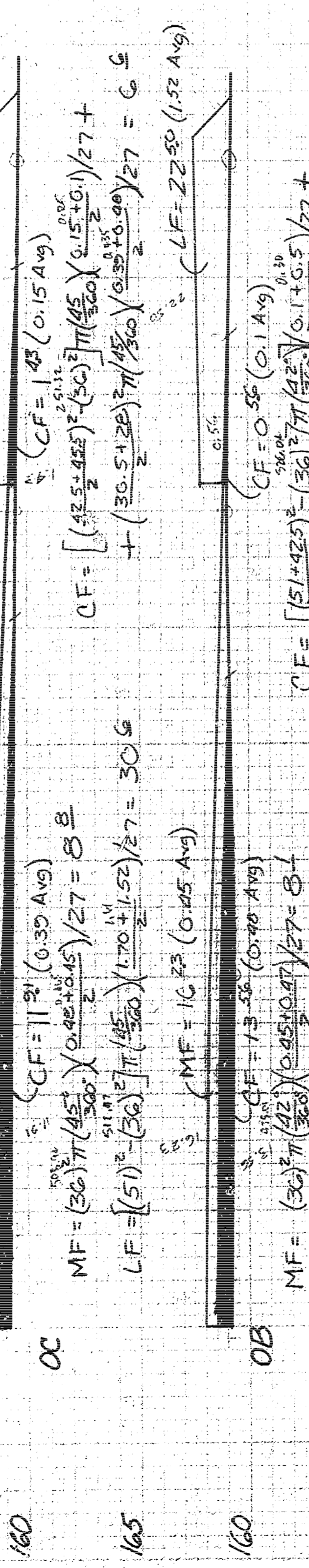
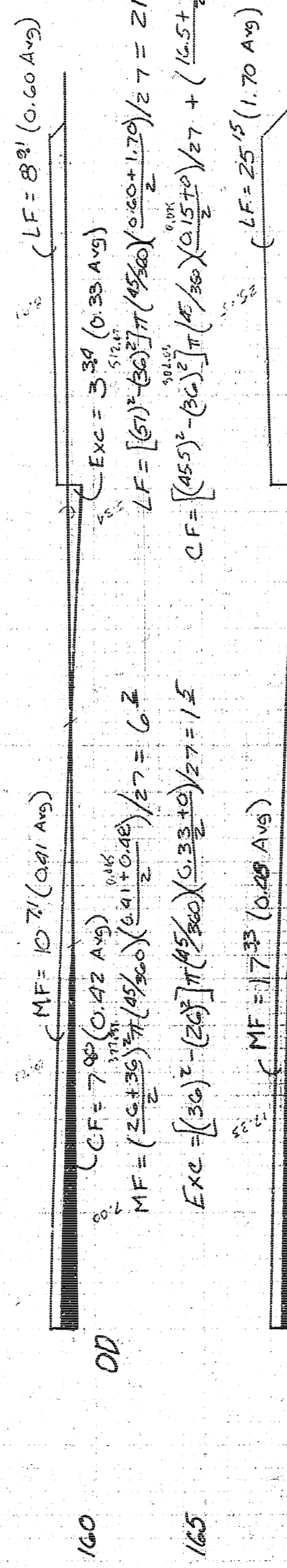
$$MF = \frac{(25.26)^2 \pi (4^2 \cdot 600) (0.42 + 0.41)}{2 \cdot 27} = 3.8$$

$$Exc = \frac{(25)^2 \pi (25 + 25^2) \pi (4^2 \cdot 600) (0.39 + 0.33)}{2 \cdot 27} = 3$$

$$LF = \frac{(5)^2 (25)}{2} \pi (4^2 \cdot 600) \frac{0.39 + 0.60}{2} \cdot 27 = 9.4$$

$$CF = \frac{(16.5 + 18)^2 \pi (4^2 \cdot 600) (0.32 + 0.42)}{2 \cdot 27} = 1.8$$

MF 3.8
Exc 3.3
LF 9.4



Project Totals
MF 327.4 CY
Exc 1745.4 CY
LF 620.8 CY
LF 1030.8 CY

$$Borrow = 1.1 \left[\frac{10200 + 1.2(327.4 + 620.8) - 0.8(1745.4)}{30} \right] = 836.6 \text{ C.Y.}$$

Page Totals
MF 141.9 CY
Exc 456.5 CY
LF 100.2 CY
LF 432.7 CY

